

Nov 16 5 04 PM '84

BEFORE THE LAND USE BOARD OF APPEALS OF THE STATE OF OREGON

1 PORTLAND AUDUBON SOCIETY,)
2 DENNIS TYLKA and 1000 FRIENDS)
3 OF OREGON,)
4)
5 Petitioners,)
6 vs.)
7 CLACKAMAS COUNTY, R.G.)
8 PETERS and H. RICHARD SELLERS,)
9 Respondents.)

LUBA No. 84-060
FINAL OPINION AND ORDER

10 Appeal from Clackamas County.

11 Richard P. Benner, Portland, filed the Petition for Review
12 and argued the cause on behalf of petitioners.

13 Michael E. Judd, Oregon City, filed a response brief and
14 argued the cause on behalf of Respondent County.

15 Robert A. Russell, Portland, filed a response brief and
16 argued the cause on behalf of Respondents Peters and Seller.
17 With him on the brief was Edward I. Engel.

18 DUBAY, Referee; BAGG, Chief Referee; KRESSEL, Referee,
19 participated in the decision.

20 REMANDED 11/16/84

21 You are entitled to judicial review of this Order.
22 Judicial review is governed by the provisions of ORS 197.850.

23
24
25
26

1 Opinion by Dubay.

2 NATURE OF THE DECISION

3 This is an appeal from an order amending the county's
4 comprehensive plan. The amendment designates as wetlands 18
5 acres of a 58 acre study area. The county comprehensive plan
6 and development ordinance prohibit any development within a
7 designated wetland.

8 FACTS

9 The 58 acre study area, which is near the unincorporated
10 community of Welches, is included in the 1976 Mt. Hood
11 Community Plan, as amended in 1982. It is located between the
12 Salmon and Sandy Rivers, a quarter mile south of state Highway
13 26. The area is bisected by Routledge Avenue.¹

14 When LCDC reviewed the community plan for acknowledgement,
15 the county had insufficient information about the 58 acres to
16 inventory it as wetlands as required by Statewide Planning Goal
17 5. LCDC administrative rule allows for a delayed application
18 of Goal 5 in these circumstances.² Pursuant to the rule, the
19 county designated the area as a study area and committed itself
20 to determine the extent of the wetland and its boundaries.

21 After holding several hearings, the county commissioners
22 accepted the recommendation of the planning staff and selected
23 18 acres for designation as wetlands in the county
24 comprehensive plan.

25 ASSIGNMENTS OF ERROR A AND B

26 The first two assignments of error charge the county

1 omitted man-made wetlands from the designated area.
2 Petitioners say this omission violates Goal 5 and Policy 6.0
3 of the Mt. Hood Community Plan.

4 "Wetlands" is defined in the statewide planning goals and
5 in the county comprehensive plan.³ Neither definition
6 distinguishes natural from man-made wetlands. Indeed, the
7 terms "natural" and "man-made" do not appear in either
8 definition.

9 Statewide planning Goal 5 requires wetlands to be
10 inventoried and protected.⁴ There is nothing in Goal 5
11 itself, or in LCDC's definition of wetlands, indicating the
12 goal is to apply to some kinds of wetlands and not others. If,
13 as petitioners contend, man-made wetlands were excluded from
14 the challenged designation the county erroneously construed
15 Goal 5.⁵

16 The county, however, argues no distinction was made between
17 man-made and natural wetlands. In support of this claim, the
18 county points to the final order's explanation of why the area
19 north of Routledge Avenue was not considered wetlands. The
20 order states in part:

21 "This area is not characterized by a 'prevalence of
22 vegetation or aquatic life which requires saturated or
23 seasonally saturated soils.' There are a few small
24 wet areas located in skid roads or other small
25 depressions which have characteristics of a wetland.
26 These areas do not seem to be interconnected and are
few in number. The area as a whole is forested."
Record at 2.

25 Although this statement supports the county's position to
26

1 some extent, there are other findings in the order indicating
2 the county did make a distinction between man-made and natural
3 wetlands in drawing the challenged boundary. These findings
4 are included in the planning staff report which was adopted as
5 additional findings and conclusions of the county
6 commissioners. The planning staff report describes the site as
7 follows:

8 "The area north of Routledge Road is an area of
9 hummocky terrain with seasonal drainageways running in
10 an easterly to westerly direction. A June field
11 reconnaissance by the planning division staff
12 established that the area was wet only in areas which
13 had been previously impacted by man. These areas were
14 basically roadways or drag trails which were created
15 by logging activities." Record at 12.

16 The staff report concludes that most of the wet areas were
17 man-made and that Policy 16 of the county's comprehensive plan
18 "protects natural areas, not man-made." Record at 4.

19 The staff findings and conclusions conflict with the
20 commission's findings that the area north of Routledge Avenue
21 is excluded from the boundary because of the small number of
22 isolated pockets of wet soils. Consequently, the order
23 reflects inconsistent approaches to the wetland boundary
24 designation. We therefore sustain this assignment of error.
25 The county is obliged to clearly explain the basis for the
26 boundary, and that basis must be in compliance with the
27 definition of wetlands in the statewide planning goals.
28 Goracke v. Benton County, 68 Or App 83, ___ P2d ___ (1984).

1 ASSIGNMENTS OF ERROR C AND D

2 Petitioners claim there is no substantial evidence in the
3 record to support the 18 acre wetland boundary.

4 The boundary is in two segments. One segment is within
5 property known as the Peters-Seller property. This property
6 lays partly north of Routledge Avenue and partly south of it.
7 Only a small area on the eastern edge of the Peters-Seller
8 property is designated as wetlands.⁶ The second segment is
9 the remainder of the boundary not on the Peters-Seller
10 property.

11 Petitioners made separate claims that each segment is not
12 supported by substantial evidence in the record. The claims
13 are stated separately because the challenges to the sufficiency
14 of the supporting evidence are on separate bases. We take them
15 in turn.

16 1. Boundary not on Peters-Seller Property

17 The county planning staff proposed the 18 acre wetland
18 boundary. Their report provided the only basis for the
19 commission's decision regarding the portion of the wetland not
20 on the Peters-Seller property. Indeed, the staff report was
21 adopted in toto as findings and conclusions of the
22 commission.⁷

23 The staff report includes a general description of the
24 topography, hydrology and vegetation of the area. The
25 description notes Routledge Avenue divides the study area into
26 two distinct subareas.

1 "The area north of Routledge Road is an area of
2 hummocky terrain with seasonal drainageways running in
3 an easterly to westerly direction. A June field
4 reconnaissance by the planning division staff
5 established that the area was wet only in areas which
6 had been previously impacted by man." Record at 12.

7 South of Routledge Avenue, the property is described as
8 sloping to a flat area with a "confused array of
9 drainageways."
10

11 "It is the drainage from the steep area and from the
12 northeast which accumulates in the flat floor making
13 up the wetland. This particular area has a high
14 degree of wetland vegetation and a large amount of
15 water. The area is saturated year round with water
16 depth ranging from 1" to 20" deep throughout the
17 site." Record at 13.

18 The "conclusions" section of the staff report states the
19 area north of Routledge Avenue has a water table from 7 to 20
20 inches below the ground surface, and the area is in a different
21 drainage basin than south of the road. Record at 5. In
22 addition, the report concludes the area north of the road and
23 excluded from the wetland "is an area of hummocks supporting
24 primarily upland vegetation." Record at 4.

25 The report also concludes the area south of Routledge
26 Avenue has a flat, poorly drained area of swamps and bogs with
27 few examples of upland vegetation.

28 We do not believe the staff report constitutes evidence
29 which a reasonable mind would accept to support the decision to
30 establish the challenged wetland boundary. Braidwood v. City
31 of Portland, 24 Or App 477, 546 P2d 777 (1976).

32 We read LCDC's definition of wetlands (See footnote 3) to

1 hinge on three major factors: (1) the hydrological features
2 resulting in a condition of excess water; (2) the effect of
3 excess water on soil development; and (3) the existence of
4 plant and animal communities supported by water dominant
5 soils.⁸ Although the staff report includes mention of two of
6 these factors, hydrology and vegetation, the report lacks
7 sufficient detail to support establishment of a boundary
8 between wetlands and non-wetlands. For example, the report
9 articulates several reasons why the area north of Routledge
10 Avenue is not a wetland, i.e., existence of dominant upland
11 vegetation, scattered wet areas resulting from logging
12 activities, a water table below the surface, and the existence
13 of a different drainage basin. Notwithstanding this evidence,
14 the report recommends inclusion in the wetland boundary of a
15 substantial area north of the road. There is nothing in the
16 staff report indicating the basis for drawing the boundary in
17 the area north of Routledge Avenue.

18 Similarly the report provides no basis for differentiating
19 between wetlands and non-wetlands south of Routledge Avenue.
20 The topographical site description in the report indicates a
21 flat area which has a "high degree of wetland vegetation and a
22 large amount of water." Record at 12. The report goes on to
23 say water table depth in this area varies between one inch and
24 20 inches throughout the year. These facts, however, do not
25 show the limits of the wetlands. The staff report includes no
26 facts which would lead a reasonable mind to conclude that only

1 the area inside the boundary south of Routledge Avenue is a
2 wetland, and the areas outside the designated boundary are not.

3 The staff report also states the 18 acre wetland was
4 identified after on-site examinations by the planning staff.
5 We do not consider this conclusion, by itself, to be evidence
6 supporting the boundary between wetlands and non-wetlands.
7 While staff reports and testimony of county personnel may be
8 relied upon to provide information in some circumstances, Meyer
9 v. Portland, 7 Or LUBA 184 (1983), conclusional statements of
10 the type in question cannot be considered evidence supporting
11 the ultimate determination. City of Salem v. Families for
12 Responsible Government, 64 Or App 238, ___ P2d ___ (1983); See
13 also Miles v. Clackamas County, 48 Or App 951, 618 P2d 986
14 (1980).

15 For the above reasons, we sustain petitioners' claim the
16 segment of the wetlands boundary outside the Peters-Seller
17 property is not supported by substantial evidence in the record.

18 2. Boundary Within Peters-Seller Property

19 We next turn to petitioners' claim there is no substantial
20 evidence supporting the portion of the boundary located on the
21 Peters-Seller property. There was conflicting expert evidence
22 about the size and location of the various wetlands.⁹ The
23 county commission found two reports of K.F. Bierly, a wetlands
24 consultant, to be the strongest evidence of the wetlands'
25 location.

26 Petitioners claim the second Bierly report does not

1 constitute substantial evidence to support the county's
2 determination with respect to the Peters-Seller property. They
3 insist other expert evidence shows deficiencies in Bierly's
4 sampling methods and errors in his interpretation of data
5 obtained from field sampling. We do not sustain this claim for
6 the reasons set forth below.

7 The first Bierly report, made in July 1983, consists of
8 narrative descriptions of geology, hydrology, soils and
9 vegetation in the study area. The report goes on to describe
10 three types of tree and plant associations on the Peters-Seller
11 property:

- 12 (1) A forest dominated by western hemlock, western
13 red cedar and Douglas fir with an understory of
Oregon oxalis;
- 14 (2) A forest dominated by western red cedar and red
15 alder with an understory of skunk cabbage and
slough sedge; and
- 16 (3) A shrub dominated forest opening composed
17 primarily of hardtack. Record at 11.

18 The report states the first of the above associations do
19 not grow in wetlands.¹⁰ The second category includes trees
20 and plants that are clearly wetland indicators. The third
21 category has some plant species associated with wetlands and
22 other species usually found outside wetlands.

23 The report states delineation of these areas was done by
24 pacing along property lines via a compass course and locating
25 the wetlands boundary at critical points along the property
26 line. A map in the report shows a wetland on the southeast

1 portion of the Peters-Seller property.

2 The second Bierly report describes a plant inventory of the
3 Peters-Seller property made by sampling techniques. The report
4 describes the sampling methods, and includes the sample data.
5 It also includes an interpretation of the data, disclosing the
6 existence and location of wetlands on the property. According
7 to the second report, change in the wetland boundary noted in
8 the first report was not called for by the data described in
9 the second report.

10 Petitioners argue that the Bierly reports are not
11 substantial evidence because reasonable minds would not rely on
12 them to support the conclusion reached by the county. See
13 Miles v. Clackamas County, 48 Or App 951, 618 P2d 986 (1980).

14 To establish this proposition, petitioners make three separate
15 claims: (1) the sampling methods were not adequate; (2) the
16 analysis of the data for the area north of Routledge Avenue was
17 in error; and (3) analysis of the opening in the forest south
18 of the avenue was also deficient.

19 A. Sampling Errors

20 Petitioners claim the sampling methodology was deficient
21 for two reasons.¹¹ First, it is claimed too few samples were
22 taken. Second, the method improperly considers each sampling
23 transect¹² to be a "stand," i.e., homogeneous along the
24 length of the transect.

25 Petitioners cite to the opinions of three experts who argue
26 additional samples should have been taken.¹³ However, these

1 opinions do not so undermine the sampling technique utilized
2 that it cannot be relied upon by the county. None of the
3 opponents' experts demonstrated the unreliability of the Bierly
4 report other than by an expression they, or quoted writers on
5 the subject, would take a more intensive sample to achieve a
6 more accurate result. Such opinions do not demonstrate the
7 sampling method utilized resulted in unacceptable results.¹⁴
8 On such technical issues, a decision based on expert evidence
9 will not be overturned unless other evidence clearly
10 demonstrates reliance on the expert evidence is unreasonable.

11 Petitioners also attack the statement in the second Bierly
12 report that each transect was considered a "stand" for purposes
13 of analyzing the sample data. The experts cited by petitioners
14 explain a "stand" signifies a homogeneous area of vegetation,
15 and this characterization is inappropriate when boundaries
16 between different vegetation types are to be identified.
17 Assuming "stand" has the meaning petitioners contend, it is
18 unclear how the statement in the report has affected the
19 findings and the analysis in the report. The report does not
20 treat each area containing a transect as a homogeneous unit as
21 the opponents' experts suggest it does. As previously noted,
22 the report identifies three different plant associations on the
23 Peters-Seller property. The boundaries between the three types
24 of plant associations are reported to cross some of the
25 transects. The report states:

26 "Transects 5 and 6 are much less homogeneous than

1 Transects 1 - 4. Transect 5 crosses a willow and
2 alder swamp and enters a Bigleaf maple, Western red
3 cedar forest between the 4th and 5th sample point.
4 This change in overstory is paralleled by a shift in
understory composition. After the 8th quadrat point
(400') on Transect 5, sword fern and Oregon oxalis
appear in significant abundance.

5 * * *

6 "Transect 6 passes through an alder forest into a
7 non-forested opening and then back into an alder
forest." Record at 608.

8 These excerpts show the analysis in the Bierly reports
9 takes into account changes in types of trees and plant life
10 along transects. Each transect was not considered to pass
11 through homogeneous areas. We therefore do not accept
12 petitioners' claim that the reference to each transect as a
13 "stand" renders the sampling method and analysis insufficient
14 to support this component of the county's decision.

15 B. Data Interpretation Concerning Area North of
16 Routledge Avenue

17 In addition to petitioners' claim faulty sampling methods
18 were relied on, they claim the second Bierly report makes
19 erroneous interpretations of the data collected. The first
20 challenge is to the analysis leading to the conclusion the area
21 on the Peters-Seller property north of Routledge Avenue is not
22 a wetland. Because of past logging in the area, the natural
23 composition of tree and plant life has been altered. The
24 observed composition is noted in the report to be a
25 successional, or seral, pattern of hemlock forests as described
26 in a 1973 U.S. Forest Service Technical Report.¹⁵

1 The Bierly report states:

2 "The description (in the 1973 U.S. Forest Service
3 report) clearly describes the forest community found
4 at Welches. The forest community north of Routledge
5 Road on the Peters-Seller site is properly described
6 as a seral state of the...(western hemlock-sword
7 fern-Oregon oxalis) association. This community also
8 resembles the...(red alder-salmonberry) community
9 described by Boss (1982) as upland." Record at 609.

10 Petitioners say the reference to the plant community
11 "described by Boss (1982)" in the above-quoted portion of the
12 report is not a valid comparison. We understand the Bierly
13 report to say that the observed vegetation is a seral stage of
14 a hemlock forest which is not found in wetlands, and this
15 conclusion is principally based on 1973 studies.¹⁶ The
16 reference to the Boss (1982) plant community supplements the
17 conclusion but is not the primary basis of it. Thus, the
18 additional reference to the Boss (1982) plant community is not
19 critical.¹⁷

20 3. Interpretation of Data Concerning Forest Opening

21 Petitioners' last challenge to the Bierly report is
22 directed at the analysis of vegetative associations in the
23 shrub-dominated forest opening encountered along Transect 6. A
24 letter from Robert Frenkel, associate professor of geography at
25 Oregon State University, notes the report references two
26 studies, one authored and the other co-authored by him. Record
at 645. These studies, he says, pertain to coastal vegetation,
implying, we presume, they may not be relevant for comparison
with plant associations found in the Mt. Hood area.

1 Dr. Theodore Boss, in a letter to the Corps of Engineers, also
2 notes the comparison with the studies of coastal vegetation and
3 says the study should be used with some discrimination outside
4 of salt marsh areas. Dr. Boss goes on to note other
5 differences between the vegetation found in the shrub areas
6 along Transect 5 and the studies of plant communities referred
7 to in the Bierly report. He concludes Transects 5 and 6 are in
8 wetlands. He discounts the weight to be given to the presence
9 of upland plant indicators in the shrub area because, as he
10 says, they may occur on hummocks above the saturated soil
11 level.

12 The Bierly report states analysis of the shrub opening is
13 difficult:

14 "The shrub dominated stand is more problematical in
15 that there is no good information with which to
16 compare it and the vegetation composition is very
17 heterogeneous." Record at 12.

18 The report adds that although the dominant species is typically
19 wetland, there are many species present with upland indicator
20 values. Bierly concludes the opening is transitional between
21 upland and wetland. He adds:

22 "The difficulty in assigning a clear definition to
23 this area results principally from the lack of
24 comparative research on freshwater wetland systems,
25 especially perched groundwater situations. The
26 species composition includes a preponderance of upland
or transition species, despite the fact that wetland
indicators dominate the site." Record at 614.

"The inclusion of this area as a wetland would require
a clear definition of 'prevalence.' If it means a
greater number of wetland plants than upland plants,
the area fails to qualify. If it means a greater

1 amount of coverage of wetland plants than upland
2 plants than (sic) the area could be considered
3 wetland. In any event, the open area under
4 consideration does not have the clearly defined
5 wetland composition and is only seasonally affected by
6 saturated soils." Record at 615.

7 The county board's conclusion that the area referred to in
8 the report is not a wetland seems to accept Mr. Bierly's
9 interpretation of the word "prevalence" in the comprehensive
10 plan's definition of "wetland."¹⁸ An interpretation of
11 "prevalence" to mean a preponderance of wetland plants rather
12 than a preponderance of wetland plant coverage on a given site
13 may be reasonable. See Alluis v. Marion County, 64 Or App 478,
14 ___ P2d ___ (1983). Nothing in the order, however, makes it
15 clear the county has, indeed, adopted such an interpretation.

16 Because this decision is to be remanded for other findings,
17 we believe it is appropriate to require the county to
18 articulate its understanding of the standard and how it applies
19 in this case. Without a clear indication of the county's view
20 of the meaning of the wetland definition, it is difficult for
21 us to perform our review function as requested by petitioners.
22 See Hoffman v. DuPont, 49 Or App 699, 621 P2d 63, rev den, 290
23 Or 651 (1980).

24 With respect to petitioners' challenge to the sufficiency
25 of evidence, we note that none of the experts relied on by
26 petitioners disputed the lack of research literature as
asserted in the report, nor did they cite to any literature
relevant to the composition of mixed upland and freshwater

1 wetland plant indicators. Under these circumstances, we cannot
2 find the analysis in the Bierly report to be unreasonable.
3 Generally, we accept the Bierly report as sufficient evidence
4 to support the conclusion the shrub opening is not wetlands.

5 Assignments of Error C and D are denied with the
6 above-noted caveat.

7 The decision is remanded for further proceedings. The
8 county should make findings clarifying whether or not man-made
9 wetlands were a consideration in establishment of the 18 acre
10 Welches wetland boundary. See discussion at page 3, supra.

11 There must also be findings supported by substantial evidence
12 in the record justifying the wetland boundaries including the
13 forest opening on the Peters-Seller property, and the boundary
14 segment outside the Peters-Seller property. In addition, the
15 county should explain how the definition of wetland is to be
16 interpreted when both upland and wetland plant indicators are
17 present as discussed above.

18

19

20

21

22

23

24

25

26

FOOTNOTES

1
2
3

1

4 The road is variously referred to the in the record as
5 Routledge Avenue, Rutledge Road, and Routledge Lane. For
6 consistency, we will use the term Routledge Avenue in this
7 opinion.

8
9
10
11
12
13
14
15
16
17
18

2

OAR 660-16-000(b) states:

19 "Delay Goal 5 Process: When some information is
20 available, indicating the possible existence of a
21 resource site, but that information is not adequate to
22 identify with particularly the location, quality and
23 quantity of the resource site, the local government
24 should only include the site on the comprehensive plan
25 inventory as a special category. The local government
26 must express its intent relative to the resource site
through a plan policy to address that resource site
and proceed through the Goal 5 process in the future.
The plan should include a time-frame for this review.
Special implementing measures are not appropriate or
required for Goal 5 compliance purposes until adequate
information is available to enable further review and
adoption of such measures. The statement in the plan
commits the local government to address the resource
site through the Goal 5 process in the
post-acknowledgment period. Such future actions could
require a plan amendment.

19
20
21
22
23
24
25
26

3

The definitions section of the statewide planning goals
defines "wetlands" as follows:

"Land areas where excess water is the dominant factor
determining the nature of soil development and the
types of plant and animal communities living at the
soil service. Wetlands soils retain sufficient
moisture to support aquatic or semi-aquatic plant
life. In marine and estuarine areas, wetlands are
bounded at the lower extreme by extreme low water; in
freshwater areas, by a depth of six feet. The areas
below wetlands are submerged lands."

The county's definition of wetlands in its acknowledged

1 plan is as follows:

2 "WETLANDS: Areas inundated by surface or ground water
3 sufficient to support a prevalence of vegetation or
4 aquatic life which requires saturated or seasonally
5 saturated soil conditions for growth and
6 reproduction. Wetlands generally include swamps,
7 marshes, bogs, sloughs, wetmeadows, river overflows,
8 mud flats, natural ponds or other similar areas."

9 Although the wording in the above definitions is not
10 identical, the parties agree there is no significance between
11 the criteria for designation of wetlands for purposes of this
12 proceeding. We, therefore, do not consider whether the
13 difference in the definitions is significant or not.

9
4

10 Goal 5 provides:

11 "GOAL: To conserve open space and protect natural and
12 scenic resources.

13 "Programs shall be provided that will: "(1) insure
14 open space, (2) protect scenic and historic areas and
15 natural resources for future generations, and (3)
16 promote healthy and visually attractive environments
17 in harmony with the natural landscape character. The
18 location, quality and quantity of the following
19 resources shall be inventoried:

16 * * *

17 "g. Water areas, wetlands, watersheds and groundwater
18 resources;

19 * * *

20 "Where no conflicting uses for such resources have
21 been identified, such resources shall be managed so as
22 to preserve their original character. Where
23 conflicting uses have been identified the economic,
24 social, environmental and energy consequences of the
25 conflicting uses shall be determined and programs
26 developed to achieve the goal."

24
5

25 Although the Mt. Hood Community Plan has been acknowledged
26 by LCDC as in compliance with statewide planning goals,
amendments to the plan must be in compliance with the goals.
ORS 197.175(2)(a).

1

6

2

The size of the wetlands on the Peters-Seller property is not clear from the record. The planner on the county staff estimated the size to be three acres. Record at 142.

4

7

5

The county's order states the commissioners relied upon the report and conclusions of a wetlands consultant, K.A. Bierly. The Bierly report is based on a detailed field examination of the Peters-Seller property. Since only a small part of the wetland is located on the Peters-Seller property, the wetland boundary, for the most part, is not supported by the Bierly report.

9

8

10

Whether evidence of all three factors is necessary to verify the existence of a wetland in all cases is neither raised by the petitioners nor necessary to the decision. We express no opinion on this issue.

12

9

13

In the opinion of experts, the size of the wetlands ranged from 18 to 85 acres. Record at 85, 58, 640, 596 et seq.

15

10

16

Hemlock and Douglas fir are intolerant to flooding in shallow groundwater. Record at 398.

17

11

18

Petitioners also claim the sample was taken at the wrong time of year. This objection was withdrawn at oral argument.

20

12

21

We understand a transect to be a line along which samples are taken.

22

13

23

One expert merely states Mr. Bierly did not take enough samples to determine boundaries. Record at 642. Another states the intervals between samples should be shorter so that changes in plant communities may be better detected. The third makes two arguments. First, he alleges no calculations were

26

1 made to determine the necessary number of samples or the
2 statistical reliability of the samples actually taken. Second,
3 he cites to scientific literature recommending more intensive
4 or differently organized sampling systems.

4 14

5 For example, criticism that statistical calculations of the
6 degree of sampling error were not made is not evidence the
7 sampling error is unacceptably large. The experts relied on by
8 petitioners also cite to the work of other experts in the use
9 of sampling methods who used more but smaller plots, and to
10 others who "recommended" more plots than Bierly actually
11 sampled. These claims do not demonstrate the technique
12 described in the Bierly reports is unreasonable.

9 15

10 Franklin, J.F. and C.T. Dyrness, 1973. Natural Vegetation
11 of Oregon and Washington. U.S. Forest Service. General
12 Technical Report PNW-8, 417p.

12 16

13 Dyrness, C.T. 1973. Early States of Plant Succession
14 Following Logging and Burning in the Western Cascades of
15 Oregon. Ecology 54(1):57-59. See also footnote 12.

15 17

16 An Oregon State University associate professor of
17 geography, Robert Frenkel, also questions the comparison made
18 in the Bierly report of the plants north of Routledge Avenue
19 with the community described by Dyrness et al in 1974. See
20 Record at 645. Professor Frenkel admits there is a valid basis
21 for comparison with the vegetation in previously reported
22 studies but notes the presence of certain plants in Transects 1
23 - 4 suggests the site is too wet to support a hemlock climax
24 forest. We understand the statement of Dr. Frenkel to suggest
25 additional investigation regarding the relevance of these
26 additional plant species. We do not believe this suggestion
significantly undermines the Bierly report.

23 18

24 Our analysis of this issue is made difficult by the absence
25 of specific findings concerning the area in question as well as
26 the ambiguity in Mr. Bierly's discussion (quoted at page 14) of
the issue. On remand, it would be helpful if the county
specifically addressed this issue in the final order.