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Bertram Kellogg Dunshee

LAND PLANNING IN MARIN COUNTY

An Interview Conducted by
Amelia Roberts Fry

Berkeley

1965

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INTRODUCTION

In late 1961 Professor Joe S. Bain of the Department of Economics requested that Mr. Bertram K. Dunshee, who had retired from Pacific Gas and Electric Company in 1957 as manager of the Land Department, be interviewed as a part of the California Water Industry Study that Professor Bain was conducting. This interview was tape recorded in a borrowed recording room in the Language Laboratory in Dwinelle Hall of the University of California campus, and although Mr. Dunshee and the interviewer tried many times to arrange a second session to follow the first, it finally became apparent that his other activities would never permit sufficient time in his schedule. He and his wife Verna (for many years ^{Vice-president} Secretary of the Marin Conservation League) were on constant call at Sacramento to help with testimony for conservation measures when the Legislature was in session; in

addition, he was frequently called out of town by P.G.&E. for consultation in connection with the natural gas pipeline from Canada, with the intertie between P.G.&E. and Oregon's Pacific Power and Light Company, and with other projects that involved land transactions for the company. Nevertheless, Mr. Dunshee was highly cooperative in going over the transcript for errors and making such corrections as were necessary before the manuscript was bound.

A native of Santa Barbara, he won his B.S. degree in civil engineering at the University of California in 1914. He worked for the California Highway Commission until May of 1917 when he entered the Engineer Corps of the Army. At war's end (in 1919) he was discharged with the rank of a captain, whereupon he returned to the Highway Commission for a year as a resident engineer. Keeping that title, he moved over to Howe and Peters Company in San Francisco, a job that led into his joining P.G.&E. in 1922. Starting as a draftsman, he later transferred

to the Claims Department, first as an adjustor, then as manager. In 1946 he became head of the Land Department, a position he held until his retirement eight years later.

Mr. Dunshee's side career as a conservation enthusiast and resident of one of Marin's most beautiful areas, Ross, provides most of the recorded conversation in the first part of the interview, since he and his wife were active in the first successful land planning attempts in the country. The fledgling planning commission and interested citizens were soon faced with the dilemma of the projected Golden Gate Bridge, which would destroy the insular character of Marin. On the heels of this came the World War II boom with its military installations, shipyards, and housing problems.

Later in the manuscript the talk swings to reservoir land problems, the evolution of concern of Mr. Dunshee's P.G.&E. department with conservation values in reservoir planning, and the many public control agencies which are involved with P.G.&E. in

the complex process of providing sufficient power for the community needs at fair rates without creating a body of expenditures that would make a power project unfeasible for a private company like P.G.&E.

This interview was conducted by the Regional Cultural History Project as a part of the program to tape record memoirs of people who have contributed to the history of northern California. Among other manuscripts dealing with California water resources and conservation are interviews with Frank Adams, Louis Bartlett, Stephen Downey, William Durbrow, Charles Lambert, J. Rupert Mason, Horace Albright, Newton B. Drury, William Colby, and a series on forestry and conservation. The project, headed by Willa Klug Baum, is under the supervision of Professor A. Hunter Dupree, Director of the Bancroft Library.

Amelia Roberts Fry, Interviewer
Regional Cultural History Project

30 August 1965
Regional Cultural History Project
Room 486 The General Library
University of California
Berkeley 4, California

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*In original copy of manuscript deposited in the Bancroft Library.

Dunshee - 8 January 1962

1

Bertram Kellogg Dunshee

Land Planning in Marin County

Fry: To start with I want to find out about Marin County and the land-planning that was done there. You knew a lot about that, didn't you?

Du: I know a good deal about it. I remember when ^{Hugh} Pomeroy was employed to make a tentative master plan for the county, and as a result of his work, a planning commission was eventually formed and a planning director hired.

Fry: This was pre-planning commission days, then.

Du: Yes.

Fry: This is the citizens' group that was interested in it and that the county supervisors gave the green light to?

Du: Yes, it was a group of mostly women, as it turned out, although there were some men involved in it. They called themselves then the Marin Planning and Conservation Society, I think. It was later incorporated and they drop^ped the word "planning." It's "Marin Conservation League" now.

Fry: Did this have anything to do with Frederick Thompson's Marin County

Fry: Planning Survey Committee, in 1934? Are you familiar with that?

Duns: It was about that time. I remember Frederick Thompson was, I think, chairman of the board of supervisors at that time, in that general time.

Fry: I have the date 1936 for the planning commission. This happened before 1936 and that's what I'd like to get a story on. What did the citizens do and what did you do?

Duns: You have the wrong person here. I think you ought to have my wife, who's out in the car. She was one of the group and was a member of that early committee. I was not.

Fry: Was it you or your wife who was in on acquisition of the Varrell property for Audubon?

Duns: We were both in on that. My wife was the vice-president of the Marin Conservation League at that time, which took the lead in that, and I've just been, in respect to those things -- I say facetiously, but more or less seriously, that I have two achievements in Marin County, one of them is being Verna Dunshee's husband and the other is being Millie Dunshee's father.

Fry: Do you know how the idea of the planning commission for
(Continued on next page.)

THE UNIVERSITY OF CHICAGO

1954

TO THE PRESIDENT AND FELLOWS OF THE UNIVERSITY OF CHICAGO
FROM THE FACULTY OF THE DIVISION OF THE PHYSICAL SCIENCES

RESOLUTION

WHEREAS the Faculty of the Division of the Physical Sciences
has considered the report of the Committee on the
Structure of the Division of the Physical Sciences
and the recommendations of the Committee on the
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APPROVED: _____

Fry: Marin County first came about, and why?

Duns: Well, the group got together primarily to do something about roadside protection -- the elimination of large advertising signs where they interfered with natural scenery. They were concerned with beautification of the roadsides. And at that time, incidentally, the preservation of areas suitable for camping and picnicking such as Camp Taylor -- later it became Taylor Park -- all that at first was incidental. The

Dunsh: main objective was to protect the roadsides and, as I say, then to preserve areas that were suitable for public use generally in their natural state. And this group, as I recall it, employed a man who had a national reputation as a planner, ^{Hugh} Pomeroy his name was, who made a rather vague, but nevertheless adequate for the purposes, master plan of the county, showing what might be done.

Fry: I wonder if that's this thing that I picked up. (Looking at a master plan map) I'll let you see that. That's 1943, that's later, isn't it.

Dunsh: No, this is later. This came about in Mary Summers' day when this group became active, along with other groups, in developing Camp Taylor and Tomales Bay parks and a start on this Point Reyes Peninsula public area that's now so active. But the first concrete thing the group did was to get behind a county ordinance regulating the public highways so far as advertising is concerned -- not only advertising, but other construction that would mar the scenery, the aesthetic value of the highway.

Fry: Did it go into zoning at all?

Dunsh: Not at that time. Having got the ordinance written and passed by the supervisors, then a move was started to create a planning commission, and one was appointed.

It was before the war, I would say in the late thirties, when the planning commission was formed. About 1938, and Charlie Lund was the first chairman of the planning commission.

(In 1932 the board appointed a group of citizens, it says here.)

My placing it before the war -- I know the first man they appointed as a planning director went into the service and didn't come back. That's why I know it was before the war, and he'd been there only a few years, as I remember.

Fry: How did this group finance itself?

Dunsh: By subscription.

Fry: Of the citizens around Marin?

Dunsh: It was a fairly good-sized group and they put up money themselves and went out with their hand out around the county and picked up other funds. Expenses were not great. The principal one was paying Pomeroy's wages and staff. He had quite a few people with him to

Dunsh: make his maps and things that he needed. I've forgotten what the total cost was, but in present terms it wasn't great.

they
Fry: And were able to get the highway advertising regulated. This was billboards --

Dunsh: I think Marin's County's ordinance was the first anti-sign ordinance in the state. It's been quite effective.

Fry: Are you fairly well satisfied with the way this master plan has been developed over the years?

Dunsh: Yes, reasonably well. I have reservations about planning myself, that is, overplanning. I think some places we overplan. I think that we've been fortunate in Marin County to have some pretty good planners. I think Mary Summers is a good planner, and I think under her direction, generally speaking, the work has been well done, particularly the master plan. The criticism I would have, if any, would be as to some of the details. My sour comment about planning is brought about -- somewhat philosophically/^{the way}I feel about those things -- in view of my experience in dealing with land so long. Perhaps I've given land more importance than it deserves,

Dunsh: although of course it's vital to us; everything we have, eat or wear or use, comes from the land eventually. And I have a feeling that one of the main differences between a free society such as we live in -- almost free anyway -- and some of the others is that we do here have the right to our land and to control and use its products individually. And any time you give away some of those rights or restrict your ability to use the land and its products you're buying ^{what you get} with a slice of your liberty in a way.

The first thing that any dictatorial government does is control the land for the reason that if he can control the land and the means of living then he has control of the people.

Fry: And we have seen more and more controls.

Dunsh: We have seen more and more controls going on.

Fry: When you were backing the land zoning you were doing this with a grain of salt?

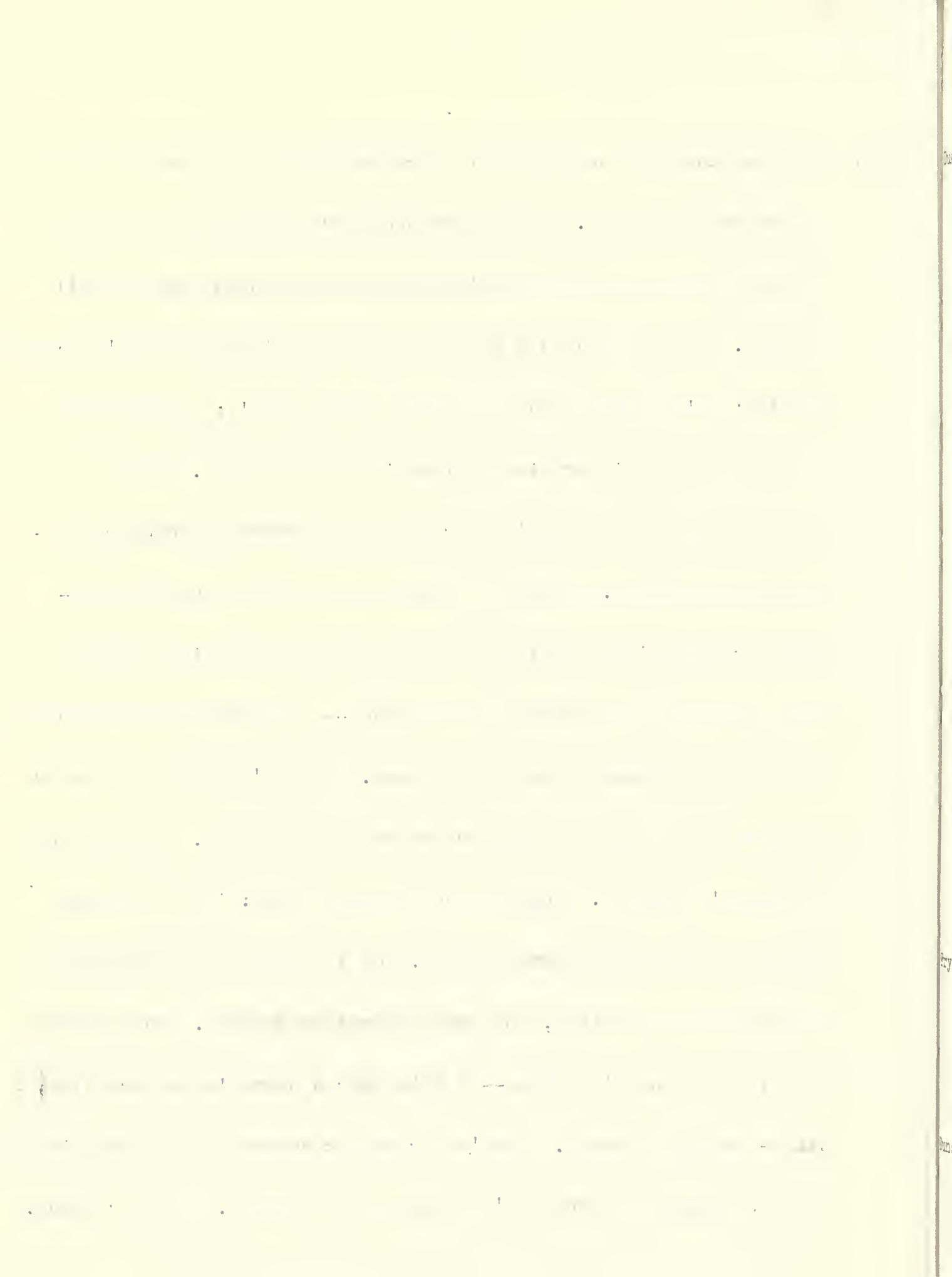
Dunsh: Yes. I would say that planning and zoning and all those things that go with it are necessary when we come to the stage in our society that we're in in this area at least. We have a population problem



Dunsh: and the land must be used to its greatest efficiency for the benefit of the whole society. It becomes necessary to go into a planning problem by government as distinguished from planning by the owner himself. Any owner does a certain amount of planning or he's foolish;

he's going to lose his land if he doesn't; somebody else is going to plan it for him and take it away from him. But my criticism now is of planning through a governmental agency by compulsion from above. Because as soon as you do that you have removed from the individual his right to do all the things that he could otherwise have done with his land -- a factory in a residential zone or a residence in some other zone. He can't raise crops where he might have wanted to raise crops of various kinds. In all those things he's limited. So planning is like a drug: it is necessary when the conditions demand its use, but it should be used with a good deal of discretion, and administered by experts. And some of our planners in this state -- I think Marin County's an exception

-- are not experts. They're pragmatic people that do what is the obvious thing to do but don't think very far ahead. That is wrong,



Dunsh: in my opinion, and I think when that comes about you're inclined to have more planning than you need, and I think that is a sin. Now that was the occasion of my somewhat sour remark. In Marin County I think we're not suffering too much. The details I complain about are that I think the planning commission should have made a more strenuous effort to preserve ^{the} hills and our marsh lands, to keep the contour of the ground as it was. That's some of the beauty of Marin County -- its hills and its swamps, its mudflats -- and they're destroyed in large measure now. I think if it was possible to do so the subdividers should have been required to keep the contour about as it was, and put in larger lots. True, it would have been more expensive, but that doesn't seem to be a bar to selling property now. [Laughter]

Fry: You mentioned farms a while ago and I wondered, when you began thinking about this, whether the dairymen were represented, ^{D: No.} because I think a large percentage of the land was diary farms at the time the planning commission was formed.

Dunsh: There were dairies all the way. Almost all the area, outside of the incorporated areas of the towns, was in dairies or similar use, grazing

Dunsh: lands, and there are very few of them left now. For example up route 101 from San Rafael to Sonoma County there are none left.

Fry: Did this present a problem with the dairymen?

Dunsh: They didn't scream about it at the time because they were getting pretty good prices for their lands.

Fry: Once the planner evolves the master plan it really is carried out and administered under the board of supervisors. Now I wondered, have you had pretty good luck in getting a board of supervisors that will adhere to the master plan, or do you think they make too many concessions?

Dunsh: My personal opinion is that they make too many concessions. But as to your general question, yes and no. I would say by and large the supervisors have done a pretty fair job. There have been some unfortunate concessions which we all regret. I think possibly they regret them now, too.

Fry: What were these concessions?

Dunsh: Oh, approving sub-standard subdivisions, that is sub-divisions which had in them sub-standard roads; and permitted a shabby type of

Dunsh: construction, which would not last very long.

was going on

Fry: As this , it was county. Now you had a few towns

I suppose

who/later on began planning. Did they honor the county planning

as they expanded into the county? Did they honor that county zoning?

Dunsh: Generally they did not. I think they all have planning groups of

their own now. And in some cases some areas were incorporated into

towns because the owner of the land was restricted too much by the

county planning commission and he got his area incorporated into

adjacent cities which were more complacent. For example, I remember

one of the major ones was a man who wanted to put apartment houses

on some of the areas down there, and it was rejected by the planning

commission. The supervisors approved the planning commission's re-

jection, so he got into a local town which was glad to have the

extra tax base, I guess. They permitted the apartments to go in.

It was felt at that time -- fifteen or twenty years ago-- that it

was too early to have apartments in Marin. Have plenty of them

there now.

Fry: Do you feel that this is a kind of stock problem as our towns expand

Fry: and build out into the counties?

Dunsh: Oh, I think initially it's a problem. I think as the planning commissions become more mature, the city councilmen become more familiar with these problems and are able to take a good longrange look at it, that they'll settle back and we'll have quite a uniform policy in the town as well as outside the town. I'd say that the state and national associations of planning people, their meetings and their publications tend to level the inequalities in thinking; I've watched that take place. There will always be some who are not thinkers who just do the expeditious thing and that's true in any business.

Golden Gate Bridge

Fry: What about the advent of the Golden Gate Bridge in 1937? This was just as the planning was beginning. Do you remember the different reactions to this idea of the bridge?

Dunsh: Well, I remember my own pretty well. I was one of the old guard that voted against the formation of the bridge district and against the bond issue. I thought the bridge was premature. I realized that eventually it would come, but I felt that we didn't need that

Dunsh: rapid transportation in Marin County at that time. I was a commuter.

I commuted from Marin County to San Francisco since 1920, so I'd already been going for about sixteen years, and I rather enjoyed it.

I thought the extra fifteen or twenty minutes that I would save was better spent relaxing on the boat than it would be in the hectic stream of traffic on the bridge. To that extent I was right. It

was better. And many of ^{us} _^feared what would happen and did happen and

that is the hordes of people coming into Marin County and changing

its character entirely. It's a different county now. We, most of

us came to Marin County, because it was a rural community. We liked

that type of community. It was good for raising children, and

for living ourselves, and unless we were successful in surrounding

ourselves with property that we could control, we don't have that

anymore. It's a metropolitan area now, that is the southern part of

Marin County. So those of us who opposed the bridge, we feared that.

We were wrong to the extent that we felt the bridge would not be

economically successful. It was. People came over even more rapidly

than we'd anticipated. But I look still with some regret at

Dunsh: the passing of the ferries. It was a good place to relax in the evening, and to discuss politics or what not with your friends on the rear deck in the morning. It became a sort of a club that we enjoyed very much. And from my home to my office was only a little over an hour, which we didn't think ~~was~~ too bad. But the effect has been, for good or ill, the one we feared, but I think it had to come sooner or later because you just can't have an island like that that close to a city like San Francisco. Sooner or later it would have to be changed. We were trying to postpone it as long as possible, that's all.

Fry: What about the Marvelous Marin group, and the ones that wanted to reestablish the Northwestern Pacific Railroad. Do you remember that? Harry Ridgeway was in on that, and he worked for PG& E too.

Dunsh: Yes, Harry was president of Marvelous Marin at one time. But I hadn't heard that they wanted to reestablish the railway. The Marvelous Marin was one of those agencies that I think did most to put the railroads out of business over there, ^{by} representing the

Dunsh: commuters and the citizens in efforts to keep commuter rates and other rates down. I think, myself, that that was unwise. I think surely there should be some watchdog at work on the activities of the railroad, but the railroad might have been in business a little longer if they'd been permitted a profit on the service that they rendered. Obviously they weren't getting enough money to make the thing pay and even the Railroad Commission, or the Utilities Commission, finally realized that and allowed them to discontinue. Of course the bridge precipitated that too. But there'd have been *less* activity toward the creation of the bridge district and the building of the bridge at that time if the railroad had been able to run a better service, which it might have been able to do if it had been more *profitable*.

The Marvelous Marin organization was a glorified chamber of commerce, did a good job by and large, but I think that was one place where its philosophy was in error. And Harry Ridgeway's an old friend of mine. He was our *manager of the local division*

Dunsh: at that time. I knew him well. I also knew Bill Fusselman, who along in that time was manager of the Marvelous Marin. He's now county supervisor; I guess until two days ago he was chairman of the county board of supervisors.

Fry: I wondered how Marvelous Marin worked with the conservation group, if they did.

Dunsh: I don't recall that they did. I don't think they opposed the activities of the group either. I think it was just out of their realm. Reservoir Lands

Fry: Were municipal water district drainage areas a point in the planning? William Kent had been concerned about this, I think.

Dunsh: Yes, they were considered in the master plan which Pomeroy prepared and are still considered as very desirable areas from a public recreation standpoint.

Fry: Did they plan recreation on the watershed lands?

Dunsh: Yes, so much as is consistent with the use of watershed properties. That is, there's no objection to hiking and day use and picknicking and that type of thing. I think that camping would be always limited,

Dunsh: except downstream from reservoirs those that are not strictly watershed lands. But they were considered. There's a good deal of worry right now: the present water district board of directors is looking around for places to gain more revenue, and reclassifying some of those lands, we fear, is about to determine that some of them are not necessary as watershed lands and sell them. So that's still being watched, and that's a rather live question right now.

Fry: It was William Kent, wasn't it, who first bought those lands in order to see that their watershed lands were controlled?

Dunsh: He was an official of some of the water companies there and I think when the water district was formed it acquired much of those Kent lands. Why Kent bought them originally, I don't know, but he owned an enormous acreage on the slopes on Mt. Tamalpais, and some of the lands in the district were formerly his lands. Another Kent, Thomas Kent, was chairman of the board of directors of the water district for a number of years. He's one of William Kent's sons.

Dunsh: Now he's dead, and after his passing, the board's policies changed a little bit. It will be interesting to watch.

Fry: So they're not as conservative conservationists.

Dunsh: No, they're looking at the thing from the water company's viewpoint, solely. That is, I fear they are. There's that danger. It's giving us some concern, though nothing serious has happened yet, and probably if enough people are alert on the question, nothing serious will happen. But this Marin Conservation League and the county group, the Planning and Recreation Commission, such people as that are watching the situation rather closely. The state park people are watching it also, so that if any land should be declared surplus they would like to have the first option to acquire it if it is desirable for park purposes.

Fry: Are these reservoirs built with dams?

Dunsh: Yes.

Fry: There are no power facilities, are there?

Dunsh: No. The water supply is too small, the quantity is too small to render it valuable for power purposes.

Fry: This water is not used for irrigation then, is it?

Dunsh: Hardly any. Some minor, maybe vegetable garden type of thing.

That is the commercial vegetable gardens. But it's almost entirely used for water supply and almost entirely domestic water supply.

There's very little industrial use made of those little dams, unless you consider installations like Hamilton Field as semi-industrial use, although that's essentially residential.

Fry: Then they don't have the trouble of regulating the water level for both irrigation and recreation purposes.

Dunsh: No. They'll drain those reservoirs right down to the bone in dry years. They did two years ago. It was pretty critical. But since then they have another reservoir which presumably relieves the situation for a while.

Fry: Are conservationists bothered about what happens to the wildlife when this occurs?

Dunsh: Yes, but what are you going to do? That's just one of the penalties you have to pay for having a lot of people. You have to have water. Yes, it was too bad. It wasn't the wildlife that was hurt so much

Dunsh: when the last reservoir was built it was the farming lands that were taken out of production. Enormous areas of ranches were inundated by the latest reservoir. Actually I don't think creating new reservoirs creates too serious a problem as far as wildlife are concerned because it does provide shorelines for them to live by, which may be even better.

Fry: You find that the wildlife does seem to get along better when you dam up a stream and make a reservoir?

Dunsh: I don't know about the individual animal whose home has been disrupted, but I would say that in the broad pictures it seems to be an improvement, rather than a hurt.

Fry: The dry land animals, you mean.

Dunsh: Yes. And of course you get more fish.

Getting entirely out of this subject into my problem, of some concern to me was what the reaction would be in the Feather River area if we at the Pacific Gas and Electric Company created a couple of reservoirs out of the river bed. And

Dunsh: the general reaction we got from fishermen and hunters and conservationists generally -- the three different groups -- was favorable. They said actually the canyon was in better shape than it was before. Now that may be an exceptional case.

Fry: Do you generally have any problem with the fishermen and hunters and the conservation people when you build a dam?

Dunsh: Occasionally. Not any serious problem. You do have to denude some of the lands, but *those* [problems] comes about early in the game when you're seeking a permit from governmental agencies. What you do is denude a narrow margin of land around the flooded area, and, of course, the flooded areas.

Fry: Does a large company like PG&E, functioning in California, do a little bit more now in thinking about recreation potential?

Dunsh: A great deal more. We always permitted people to utilize our lands adjacent to the reservoirs, and even our undeveloped lands; they were permitted to camp and fish and do all things necessary so long as they didn't set fires and do other damage. But now the company is going in on what I think is a very good program of actually building

Dunsh: campsites and picnic tables and sanitary facilities, and developing a minor water supply, for camping and picnicking usage. They're doing a pretty good job on a number of lakes and along some streams. I think it's good from the company standpoint as well as from the public standpoint. From the company standpoint, aside from the public relations angle, it keeps people confined largely to those areas which can be kept clean and neat; and it probably lessens the fire danger. If people scatter all over the property they leave a hell of a mess and it's hard to keep it clean. The company doesn't have personnel to watch those things or to clean up afterwards ordinarily. Whereas if you confine them to certain areas you can.

Fry: How much land do you have to get around a reservoir? Do you ever just lease it? Or do you always buy it?

Dunsh: We always buy it.
Just for the reservoir purposes alone we usually get a strip about two hundred feet wide above the high water.

Fry: Then you don't have to get the entire watershed?

Dunsh: We don't need to get it. In some cases we need to because people won't sell less. But then we turn around and sell it to someone

- Dunsh: else. But some of that we still have on our hands.
- Fry: What do you do for land where you need to reroute a river or put a flume or something down below a dam?
- Dunsh: We generally get an easement for that as you would for a powerline or a gasline or something of that sort.
- Fry: When you get an easement do you have to buy the land first? And then sell it back?
- Dunsh: No, you don't have to. That's one thing you can do, but you can simply buy the rights to do that particular thing, and then the owner retains all the other rights.
- Fry: This is one of the things you have to do, I guess.
- Dunsh: That's one of the things that took most of my time before I retired.
- Fry: Going to all these individual owners to get them agreeable to this would be quite a job, I should think.
- Dunsh: Quite a salesman's job. We used to get during our busiest years about ten thousand documents a year. That many new numbers were established in our files! A pretty good chore.



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Fry° You hear stories about the salmon runs that are built by dams on the Columbia River. Have you things like that to do here in California?

Dunsh: Yes, that is a serious problem at any dam. The dams that we have built thus far, generally speaking, haven't been so high as to prevent the construction of fish ladders, although when you flood a stream you're going to destroy some of the spawning grounds for the fish. They spawn in gravelly sections of the stream where the water's shallow and when you put a hundred feet on top of it you don't have a spawning ground anymore. The reservoir generally fluctuates a good deal so even the margins of the reservoir don't make a very good spawning ground. So there's always damage to fish when you put a reservoir in.

We, in some cases, built fish hatcheries above our dams so as to replenish its fish population that would normally hatch there in a state of nature. Whatever we do we do under agreement with or according to instructions from the state fish and game commission.

Power Sites and Outside Controls

Fry: I wondered how much of this comes from control.

Dunsh: Well, they have the rights, but normally we're able to work pretty

Dunsh: well with them. The amount of water, for example, that we release from a dam to keep the fish alive, that's always subject of rather extended negotiations. And of course they have the whip hand. If we won't cooperate they can issue an order which we'd have a hard time getting around, I suppose. Although as I say our relations with them have been pretty fair.

Fry: Do you have a modus operandi where you pretty well know their standards and can operate on that knowledge?

Dunsh: We know their standards, but the situation will differ as to each site. Our engineers become pretty good experts on fish life, and they talk to other experts and, as it is in any line of work, they're seldom very far apart. Their interests may be apart but the facts remain the same. They'll come somewheres near the same analysis of the facts. And that's where the negotiations come in, to settle the differences.

Fry: Some states don't pay much attention to wildlife when they put in power dams. I've seen some just ruined.

Dunsh: Well, it's pretty hard to build a reservoir without doing a good deal

Dunsh: of damage, but I think any organization, whether it be a private one to the fullest extent or a public one, is foolish not to minimize that, possible, and I think our company has done that. Just from the selfish point of view, we realize that the public reaction would be pretty bad if we went ahead and did things that we didn't need to do that were damaging the aesthetic values of the whole region -- even their food supply to a certain extent, [kicking out, ? picking on] the fish. But some damage is always done. Many people hate to see a tree felled, but those of us who live in wooden houses can't complain indefinitely that you should never cut a tree.

Fry: If we're going to have power we have to relinquish some of our natural wildlife values.

Dunsh: Some, yes. They say, generally speaking, the other related forms of wildlife find their habitat on the modified area.

Fry: Up there around Feather River, isn't a lot of that territory federally owned?

Dunsh: Yes, most of it is.

Fry: You buy a little swatch of this from the federal government?

Dunsh: No, in respect to the federal government, we don't buy it. We get a permit, which really amounts to an easement, which gives us for a term of years the right to do things that we need to do.

Fry: Then are you under regulation from the agriculture department too?

Dunsh: Well, indirectly. Our contract with the federal government, speaking of the Feather River lands and that's mostly federal lands, is with the federal power commission. The federal power commission is the one that gives us the permit, but before doing so it hears from other departments, the Department of Agriculture through the United States Forest Service, the Department of the Interior, and any other departments -- the fish and wildlife service, for example, another branch of the Department of the Interior -- whose interests are supposed to be affected or thought to be affected. And they come up with a recommendation one way or the other which is sifted by the federal power commission after, in some cases, very extensive public hearings, and then regular testimony is heard by these agencies --

Fry: And this testimony is supplied by you too?

Dunsh: We supply our own expert ^{testimony} giving our reasons for doing the things we say we must do, justifying, for example, the economics of a whole project in a given case, that it's to the benefit of the public generally that this project be built because by doing so we can serve this public better, or cheaper, or in some other beneficial way, better than any other method, you see.

Fry: Are these like the budget hearings where those giving testimony always present their case just a little bit higher than they really mean because they knew it's going to be lowered as it goes through the bureaus and comes out?

Dunsh: I wouldn't like to say that was true. [Laughter] I don't know that it is true. No, I think because we're dealing with engineering testimony it's a little bit different than --

Fry: Padding the budget.

Dunsh: You have to look in the crystal ball a good deal in the budget testimony and while there's a certain amount of that in dealing to the extent to which it has to take place, and there was

Dunsh: crystal ball gazing there too; but I think less affected by that than the budget is because *uncertainties exist* only to the extent of dealing over a long period of time.

Fry: The politics of the whole situation must be very interesting.

Dunsh: Yes, it's very interesting. We have one or two attorneys that do nothing but appear before ^{these} commissions—the federal power commission, the public utilities commission—and they become expert in that type of law work.

Fry: What a wearing type of job.

Dunsh: I would think so, but they seem to fatten on it. [Laughter]

Fry: After you get the permit and you build your plant, do you sometimes find that you're doing more harm to the wildlife than had been anticipated? I'm speaking particularly of the situation at Morro Bay, where there was a steam power plant built and the oysters and shellfish were badly affected, ^{because the temperature of the Bay increased slightly} so the PG&E had to rebuild, or do something extra in order to overcome this because it was killing off some of the oysters. [From telephone interview with California Fish and Game Department, November, 1961.]

Dunsh: I don't think that's right. In fact I purchased the property on which that plant is built and was in on the planning and building

Dunsh: of the first installation that was there. Our whole plan was built upon the theory of doing no damage to the wildlife -- the oysters and the various other kinds of shellfish in that harbor -- because we were drawing our cooling water out of the bay and discharging it on the other side of the rock into the open ocean. We felt that the effects of heating that water would be minimal. We raised the temperature and the temperature of the outgoing water was felt then to be something like ten degrees greater than the temperature of the incoming water.

Fry: And this would actually raise the temperature of the bay?

Dunsh: Not measurably, no. It might have raised the temperature of that ^{in that side} water of the bay if it kept pouring in and pouring in.

So instead of discharging our water into the bay, we drew our water out of the bay and discharged it into the ocean, so we had no effect whatever on the water in the bay.

Fry: This was all taken care of before the plant was built?

Dunsh: Yes. Some of the engineers did have a theory that we might choose ^{to} discharge into the bay and I was one of those that opposed that theory even though they had proved that it wouldn't

Dunsh: do any damage to the water in the bay, that it would raise the temperature so slightly that it wouldn't do any damage. If anything should happen to the fish or wildlife in the bay after our plant was in we would always be accused of it, so I thought it would be much better planning our water circulation in such a way that we could never be said to have had any effect whatever on the temperature of the water and therefore on the wildlife. Since our plant has been in operation there've been some rather extensive investigations made by a man employed by the company. I think he's in charge of the biology department of the state college at Arcata, because up there they have a number of sea life problems, in the Humboldt Bay and some of the bays they have around up there and he's suppose to be an expert in that type of thing. He was employed to make a survey of the whole situation, taking samples of the temperature of the water, taking samples of the wildlife there and adjacent to the area to find the effects. I haven't read his entire report; I did read the summary of it, which was to the effect that there was no deleterious effect to the native sea life in the vicinity of our plant. That may have been done more than once. The latest one was

Dunsh: about two years^{ago} when they were planning additions to the plant which are now taking place. I think they wanted to see what, if anything, should be done in the way of changing the intake structure. Now if there has been any bad effect from those plants, I haven't heard about it. But I think I would have heard about it because that plant and other plants of a similar nature have been very carefully watched, especially in view of the impending construction of a plant on Bodega Bay because that has been subject to a great deal of attack on the theory that it would damage the sea life off the shore.

Fry: By the same process? That would be a steam plant too?

Dunsh: It'd be a steam plant. The fuel would be different; in this new plant the fuel maybe nuclear fuel. But there's little difference as far as the heating cycle is concerned.

Fry: Are they afraid of atomic waste products?

Dunsh: No, they are afraid of the effect of increasing the temperature, the same thing as with a conventional steam plant. Yes, there's quite a bit in the papers about that controversy. In fact, my wife hardly

Dunsh: speaks to me anymore because she thinks it was a mistake to put the plant there and in a weak moment I admitted to having suggested that as a possible plant site, years ago. [Laughter] But I don't think, from what information I've been able to get, that this will have any serious effect. The *Sierra Club* for example, hasn't taken a stand, but it's been very active in finding out why we had to do that. And they'll be public hearings on that. Watch the papers and you'll see the public utilities commission will be holding hearings on an application that we have made or will shortly make to build that plant. And unless we can convince the commission over and above any protests that are made that this is to have a plant there, for the public good, then it won't be built.

Fry: What about the members of the commission? Of course [laughing] what you should do is get some nice pro-PG&E men on the commission!

Dunsh: They're appointed by the governor. We have no control. They're appointed by the governor for long terms, I think twelve or sixteen year terms, much like the regents. So they extend, usually, over more than one administration. It was created that way for that reason --



Dunsh° to avoid getting a partisan board.

Fry: Some would be appointed by different governors.

Dunsh: Probably have some Knight appointees in there now, and when Brown's successor is in office he'll have some of Brown's appointees still on. I think it's a good thing to have it that way. We don't have any reluctance at all to come before an impartial board, one that can look at the facts and decide on the basis of facts is quite all right with us. Contrary to the suggestion you made, I think we'd be very foolish to try and get anybody on the board that would be obviously leaning in our direction. In the long run it would be a foolish thing to do, I think. What we want is impartial/people.

Fry: Does the state or the federal government have any jurisdiction to inspect, to oversee situations around reservoirs, for example?

Dunsh: Yes, there is a state water pollution board, for example, that has its rules and regulations which we must abide by, which sends its inspectors by to make sure we do abide by those rules, both before the plant is built and in the planning stage, and after it's in operation. The federal government normally does not, as I recall it, except

Dunsh: in special cases. There are some federal laws -- one, I think is a federal law, prohibits the dumping of oil or waste products in the ocean because of the damage it does to wildlife on the surface, the ducks and the birds that live on the surface. I would say the fish and wildlife service probably make certain overall watches on the compliance to that law, but if we should be guilty of violating it, then they would be right on us. If they receive a complaint, for example, that we are dumping waste products from one of our generating plants into the ocean, *along with the* discharged water, why they would be immediately on us. They could, I suppose, shut the plant down on us until we corrected it.

Fry: ^[PG+ E] Do you have irrigation people keeping an eye on it, and do you have your power people, and people from all the various groups that use water keeping an eye on it?

Dunsh: Well, we have a department of -- now we're back on the land reservoirs ^{has} -- we have a water department which the responsibility of operating those reservoirs, keeping the dams in repair, and all those things, and would include responsibility for regulating the water surfaces of

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Dunsh: the lakes.

Now you've gotten into a kind of a technical problem there. Our responsibility for keeping the water at a certain level and discharging it at certain rates depends to a great extent on the skein -- you might say -- of water rights. Now in California it is very complicated: each stream just has water right overlapping on water right. So we have certain rights, but there might be other parties having superior rights to part of the water which would require us to discharge the water out of our reservoirs and lakes which we might not do had ~~we~~ full control of it and owned the water 100 per cent. So those things all have to be taken into consideration. I can't think right now of any federal agency that has absolute control of that problem except through, in some cases, agreement with us, and other water users; and that would be the state water commission and we might -- I think do, in some cases -- enter into certain agreements and leave them the responsibility of refereeing the operation.

Fry: I do understand that water problems are difficult in California.

Dunsh: Oh, it's very complex. Of course we're short of water and, if

Dunsh: anything limits our population, it will.

Land Use: Public and Private Sites

Fry: Did you have any contact with the Central Valley plan?

Dunsh: Not through my employment, but as a member of these conservation groups, ^{and being} familiar with the state park and forest service people I had some knowledge of what they were doing, and it's working out pretty well. Initially, I think both the army engineers which built Folsom Reservoir and the Bureau of Reclamation which built Shasta and some other reservoirs in the state, including the latest one, I think Monticello, they were building and planning primarily as engineers, building a water supply project, whether it be for irrigation or power or whatever it was to be for. And they didn't pay any attention, to speak of, to providing for lands to be used later for recreation purposes, for example. In some cases, in Shasta Reservoir, that was not too critical because much of the adjacent land was federally owned -- ^{United States} the/forest service had taken land from the jurisdiction of the Department of the Interior. At Folsom it was quite critical because there they did what a private company would do, just simply bought the land they needed for the

Dunsh: reservoir and a narrow margin of strip. And then rather belatedly it was realized that there was a good deal of recreation potential simply on the water surface there, and adjacent to it for picnicking and camping. And then ^{the} problem was rather neatly turned over to the state park commission which found itself with a project to provide for this recreation, and no land, and so they had to go out and buy land. By that time the sub-dividers had been in and they had to pay pretty good prices for much of that land, high prices. A little planning could have saved a lot of that. Now I think they may have learned a lesson, because there's been a good deal of publicity with that problem now so I would hope that in future reservoirs that some attention would be paid in advance to that, because in the case of Folsom a lot of that land was bought for \$50 an acre and after the reservoir was in it was two or three thousand dollars an acre.

Fry: Mr. Newton Drury has pointed out time and again that if you can't get all the land you need right then, then the improvement by the conservationists almost defeats their ends.

Dunsh: That's it, and it's very well exemplified there at Folsom. Newton

Dunsh: is the source of some of my information, incidentally, and I was in his brother Aubrey's class. Newton is a close friend of mine.

Fry: You commented that they put Folsom in just like a private company would. The California Valley Plan is public now, isn't it? Does a public power project usually do much more than a private company in thinking of this? *[conservation values]*

Dunsh: Not ordinarily. I think they really should, because they have -- this is the federal government, it represents all the people, it includes the conservationists, the park program, the national or state parks -- and I think the public is the one that ultimately benefits by those recreation things and they should be provided for. They are taken care of, but much more expensively than would have been necessary had that plan been made at first. Now a private industry, to my way of thinking, doesn't have quite that duty.

[Tennessee Valley Authority]

Fry: It wouldn't have this multiple responsibility that TVA envisioned.

Dunsh: I don't think it does. I would say it would be a good idea for the public agencies to work with the private utility to get its land at the same time the utility is getting its and so they'd wind up with the same sort of a story.

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Fry: You mean let the lands be publicly owned --

Dunsh: Publicly owned except for the lands that are needed by the reservoir.

Fry: Has this happened? Are there any state parks around PG&E reservoirs?

Dunsh: Yes, at McArthur-Burney State Park up on the Pit River where Burney Falls is. Have you seen that? That's a PG&E reservoir, and some of the land is now within the park and though it's still PG&E land it's state leased to the for a dollar a year or something like that so they can utilize it for their boat-landing and something like a hundred picnic areas up there. There's another reservoir up on the Mokelumne River watershed on a stream that's one of the many Bear Rivers in the state. There's Lower Bear River Reservoir. About half of the marginal land on the shoreline of the reservoir is owned by the company, and the remainder by the United States Forest Service. I've for years tried to work out some sort of cooperative plan of that sort because otherwise each owner working individually is liable to get no plan or a plan that works against the other; We tried to work out a master plan for the whole reservoir and we did a pretty good job. I had my men meet for days with their engineers and their recreation people and we made

Dunsh: a map and their instructions were to make a plan for the recreational development of the lands around this reservoir without regard to who owned the land, just what this piece of land was best suited for, what was its best use from a recreation standpoint. In that type of recreation, you see, you have various categories: individual campers, the group campers like the Boy Scouts and Campfire Girls annual and the YMCA groups and the church group/summer camps, and I think that's very important because one rather limited area, ten or fifteen acres, can take care of several hundred kids throughout the summer in groups of two weeks at a time, and you get much more efficient use of the land that way. I think there's actually a shortage of that type of thing and that had very high priority in our thinking. I think the highest priority was given to that type of group and the individual camper was right along in that same priority group, just a shade below the others. Given a very low priority was the summer home builder. We felt that he may keep an area tied up for a whole year and they only use it two weeks at a time, whereas the other areas are given much better use. So we put him back on the fringes of this area.

Fry: In the state and federal parks his use of the lands is a little hard
Dunsh: And that was one of our problems. The thing to control.

actually never materialized, never got beyond the planning stage.

It may get into effect this year.

We also had a commercial development. That area was large enough that it would support a store and a supply place where they could rent boats and supply fishing equipment and buy groceries and meats, and even have a restaurant and a bar if you needed it. And a few one-night motel type units. And an area was set aside for that use.

The police thing, as I started to say, was a problem because the utility is not organized to carry on that type of activity.

So the arrangement that was suggested and I think was finally worked up into an agreement, was that we would establish a sort of over all set of rules for this layout but the actual policing would be done by the forest service and we would pay our share of their cost, on an acreage basis. If we owned 40 per cent of the acreage we paid 40 per cent of the costs, to the forest service.

Fry: I'm a little amazed that government red tape would allow you to set up something so simple.

Dunsh: Oh yes, and it worked out well. The key to the thing, what/^{we thought}get^{would} it moving so we both of us would have something to work with, was to get a concessionaire to operate this commercial establishment. We felt that was where most of the income would be. And I think so far that hasn't materialized. Well, of course, you've got to build roads, and furnish water supply and sewers and other sanitary facilities for these purposes. There's quite a bit of expense involved. And while we didn't expect to make a profit out of it, we would like to have as much as possible of any investment we made returned to us. I'll be interested to see how it finally works out because it was the first experiment that I had anything to do with along those lines where you could start from scratch. It was a canyon before, which was covered with rocks and brush and not much timber; it was practically inaccessible. We filled it with water up to the point where the land was more or less level and it was becoming more usable then, and in clearing the reservoir site itself by arrangement with the forest service we cleared the area back from the water surface -- what they call a recreational

Dunsh: cut -- we took out the old trees, the snags and the trees that would become a hazard to campers, and then it was more or less parklike -- I mean it could be used for that purpose. So the thing was done right from the planning of this thing. And I was up there within two months after the reservoir was first filled and you'd have thought that reservoir had been there for a thousand years. It just looked like a natural reservoir. Everything was done right to the water's edge, and it was really a nice job. It's a small reservoir. And I'll be very interested to see if that doesn't work out someday as possibly a forerunner of other cooperative measures if we can work with the forest service and other federal agencies on it. We don't want to give up our rights or our ownership of the land and it was understood in the agreement with the forest service that this is primarily a power reservoir and will have to be operated as a power reservoir; if it's necessary to drop the water surface when there are campers there it's going to have to be dropped. The dropping of the water level has not been too much of a problem in California with our operations though, because that

Dunsh: water is normally kept in storage until September or thereabouts, and by that time most of the campers are gone. During the peak months of camping there's usually plenty of water.

Fry: Do you have to leave now? The hour is almost gone--

Dunsh: It is time we headed back.

Fry: Thank you very much for driving over for the interview; it's been very interesting talking with you.

APPENDICES

A. Reservoirs of Pacific Gas and Electric
Company System

B. Hydroelectric Plants

RESERVOIRS

PACIFIC GAS AND ELECTRIC COMPANY SYSTEM

NAME	COUNTY	DAM CREST ELEV.	CAPACITY ACRE-FEET	PRIMARY USE
LAKE FRANCIS	YUBA	1650	1905	IRRIGATION
BULLARD'S BAR	"	1589	31489	POWER
BELDEN	PLUMAS	2995	2400	"
DE SABLIA	BUTTE	2736	280	DE SABLIA P.H.
KUNKLE	"	1496	253	LIME SADDLE P.H.
PHILBROOK	"	5924	4875	POWER
ROUND VALLEY	"	5498	1285	"
BIG BEND INTAKE	"	925	600	"
BUCKS DIVERSION	PLUMAS	5029	5843	BIG BEND P.H.
BUCKS STORAGE	"	5169	103,000	BUCK CR. P.H.
BUTT VALLEY	"	4144	49768	"
CRESTA	"	1680	4400	CARIBOU PLANTS
GRIZZLY FOREBAY	"	4321	1112	POWER
LAKE ALMANOR	"	4515	1308000	BUCKS CR. P.H.
MT. MEADOWS	LASSEN	4960	23,952	POWER
POE	BUTTE	1390	1150	HAMILTON BR. P.H.
ROCK CREEK	PLUMAS	2220	1700	POE P.H.
THREE LAKE	"	6080	513	POWER
ALTA FOREBAY	PLACER	4102	38	BUCKS CR. P.H.
AUBURN NO. 1	"	1535	3	POWER
AUBURN NO. 2	"	1535	3	DOMESTIC
BLUE LAKE	NEVADA	5964	110	"
CAPERTON	PLACER	720	11	POWER
CHRISTIAN VALLEY	"	1357	110	MINING & IRRIG.
CHALSEY AFTERBAY	"			WISE P.H.
CLOVER VALLEY	"	654	29	"
CULBERTSON LAKE	NEVADA	6708	850	IRRIG.
DEER CREEK	"	4500	20	POWER
DRUM AFTERBAY	PLACER	3385	275	DEER CR. P.H.
DRUM FOREBAY	"	4766	444	POWER
EVENDEN SETTLER	"	1577	1	DRUM P.H.
FEELEY LAKE, UPPER	NEVADA	6996	780	DOM & IRR.
FEELEY LAKE, LOWER	"	6936	184	POWER
FULLER LAKE	"	5379	1130	"
HALSEY FOREBAY	PLACER	1819	185	"
KELLY LAKE	"	5910	360	"
KIDD LAKE	"	6772	1492	"
LAKE ALTA	"	3398	270	IRRIG.
LAKE ARTHUR	"	1494	94	"
LAKE FORDYCE	NEVADA	6481	46062	POWER
LAKE SPAULDING	"	5014	74488	"
LAKE STERLING	"	6700	1648	"
LAKE THEODORE	PLACER	1595	344	IRRIG.
LAKE VALLEY	"	5853	8127	POWER
LAKE VAN NORDEN	NEVADA	6770	5874	"
"	PLACER			"
LINDSEY LAKE, UPPER	NEVADA	6753	18	"
LINDSEY LAKE, MIDDLE	"	6705	103	"
LINDSEY LAKE, LOWER	"	6508	320	"
LOOMIS	PLACER	315	5	"
MAMMOTH	"	716	115	DOMESTIC & IRRIG.

NAME	COUNTY	DAM CREST ELEV.	CAPACITY ACRE-FEET	PRIMARY USE
McCrary	PLACER	—	7	IRRIG.
Meadow Lake	NEVADA	7252	4800	POWER
Muldoon	PLACER	—	6	IRRIG.
Newcastle Town	"	1082	1	DOMESTIC
Peak Lake, Upper	"	6611	1607	POWER
Peak Lake, Lower	"	6586	494	"
Rock Creek	"	1303	550	"
Rock Lake, Upper	NEVADA	6985	207	"
Rock Lake, Lower	"	6896	48	"
Roseville Regulator	PLACER	198	4	DOMESTIC
Rucker Lake	NEVADA	5500	620	POWER
White Rock Lake	"	7752	578	"
Wise Forebay	PLACER	1280	58	WISE P.H.
Morris	MENDOCINO	1564	835	DOMESTIC
Van Arsdale	"	1488	700	POWER
Pillsbury	LAKE	1827	93724	"
Echo Lake	ELDORADO	7460	1900	"
Medley Lakes	"	8210	5350	"
Silver Lake	AMADOR	7209	11,800	"
Twin Lake	ALPINE	7960	21581	"
Eldorado Forebay	ELDORADO	3804	400	ELDORADO P.H.
Balch Afterbay	FRESNO	1686	125	AFTER BAY FOR BALCH P.H.
Balch Diversion	"	4098	1225	DIVERSION TO BALCH PLANT
Chilkoot	MADERA	7500	357	STORAGE FOR S.J. PROJECT
Corrine Lake (Wishon Forebay)	"	2402	69	FOREBAY FOR WISHON P.H.
Courtright Res.	FRESNO	8174	102500	STORAGE FOR KINGS RIVER PROJECT
Crane Valley	MADERA	3380	45410	STORAGE FOR S.J. PROJECT
Kerchoff	FRESNO	994	4300	DIVERSION TO KERCHOFF P.H.
Kern Canyon Diversion	KERN	944	15	DIVERSION TO KERN CANYON P.H.
Manzanita Lake	MADERA	2818	168	REGULATING RES. SAN JOAQ. P.H. #2
Merced Falls	MERCED	350	900	DIVERSION TO MERCED FALLS P.H.
San Joaquin #2 Forebay	MADERA	2820	200	FOREBAY FOR SAN JOAQ. P.H. #2
San Joaquin #3 Forebay	"	3224	20	FOREBAY FOR SAN JOAQ. P.H. #3
Wishon Res.	FRESNO	6550	128,000	FOREBAY FOR WISHON P.H. AND STORA. FOR KINGS RIVER PROJECT

NAME	COUNTY	DAM CREST ELEV	CAPACITY ACRE-FEET	PRIMARY USE
COLEMAN	SHASTA	870	73	COLEMAN P.H.
COW CR. FOREBAY	"	1636	5	COW CR. P.H.
KILARC	"	3840	30	KILARC P.H.
LAKE GRACE	"	3454	47	VOLTA P.H.
LAKE NORA	"	3404	15	VOLTA P.H.
MACUMBER	"	4100	425	POWER
NO. BATTLE CR.	"	5246	1016	"
HAT CREEK #1	"	3211	48	"
HAT CREEK #2	"	2980	620	"
PIT #1 FOREBAY	"	3330	2800	"
LAKE BRITTON	"	2770	40,600	"
PIT #4 FOREBAY	"	2458	2000	"
PIT #5 INTAKE	"	2056	390	"
PIT #5 OPEN CONDUIT	"	2046	147	"
AMADOR	AMADOR	1268	8	REGULATION
AMADOR CITY	"	—	.33	DOMESTIC
BEAR RIVER UPPER	"	5882	6756	POWER
BEAR RIVER LOWER	"	5820	48500	"
IONE, UPPER	"	428	2	DOMESTIC
IONE, LOWER	"	383	3	"
LOWER BLUE LAKE	ALPINE	8040	4300	POWER
MEADOW LAKE	"	7773	5950	"
NEW YORK	AMADOR	1837	49	REGULATION
SALT SPRINGS	AMADOR	3960	139400	POWER
TABEAUD (FOREBAY)	CALAVERAS	—	—	—
TANNER	AMADOR	1968	1165	ELECTRA P.H.
TIGER CR. AFTERBAY	"	1720	12	DOMESTIC & MINING
TIGER CR. FOREBAY	AMADOR	2340	3960	POWER
TIGER CR. REGULATOR	CALAVERAS	—	—	—
TWIN LAKES	AMADOR	3559	42	"
UPPER BLUE LAKE	"	3588	540	"
ALPINE	ALPINE	8172	1300	"
ANGELS	"	8131	7500	"
BLUE GULCH	"	7304	4600	MURPHYS P.H.
HUNTERS	CALAVERAS	1828	4	DOMESTIC
JAMESTOWN	TUOLUMNE	—	1	IRRIG.
(SEDIMENTATION BASIN)	CALAVERAS	3205	200	MURPHYS P.H.
JAMESTOWN	TUOLUMNE	2017	3	DOMESTIC
KINCAID	"	1999	1	"
LYONS	"	2016	50	IRRIG.
MATELOT	"	4227	5508	PHOENIX P.H.
MURPHYS FOREBAY	"	—	12	IRRIG.
MURPHYS AFTERBAY	CALAVERAS	2977	57	MURPHYS P.H.
O'NEILL	"	2287	40	POWER
PHOENIX	TUOLUMNE	—	17	IRRIG.
PIPE	"	2388	850	"
BACETRACK	CALAVERAS	1845	2	ANGELS P.H.
RELIEF	TUOLUMNE	—	6	IRRIG.
ROSS	"	7340	15122	STANISLAUS P.H.
SAND BAR	CALAVERAS	2000	85	ANGELS P.H.
	TUOLUMNE	2752	51	STANISLAUS P.H.

NAME	COUNTY	DAM CREST ELEV.	CAPACITY ACR.-FEET	PRIMARY USE
SAN DIEGO	TUOLUMNE	1998	40	IRRIG.
SLUM DAM	"	-	1	"
SOMORA	"	1890	5	DOMESTIC
SPICERS	ALPINE-	6422	4062	MURPHYS P.H.
	TUOLUMNE	-	-	
STANISLAUS FORLEAY	TUOLUMNE	2560	320	STANISLAUS P.H.
MAIN STRAWBERRY	"	5620	18600	POWER
TUOLUMNE RES. AND SEDIMENTATION BASIN	"	2747	2	DOMESTIC
UNION	ALPINE	6853	2000	MURPHYS P.H.
UTICA	ALPINE-	6775	2400	" "
	TUOLUMNE	-	-	
WOLFLING	TUOLUMNE	1720	2	DOMESTIC

HYDRO ELECTRIC PLANTS

<u>NAME</u>	<u>COUNTY</u>	<u>NAME</u>	<u>COUNTY</u>
Alta	Placer	Kern Canyon	Kern
American River	Eldorado	Kilarc	Shasta
Angels	Calaveras	Lime Saddle	Butte
Balch #1	Fresno	Melones	Tuolumne
Balch #2	Fresno	Merced Falls	Merced
Big Bend	Butte	Murphys	Calaveras
Bucks Creek	Plumas	Narrows	Nevada
Bullards Bar	Yuba	Phoenix	Tuolumne
Butt Valley	Plumas	Pit #1	Shasta
Caribou #1	Plumas	Pit #3	Shasta
Caribou #2	Plumas	Pit #4	Shasta
Centerville	Butte	Pit #5	Shasta
Coal Canyon	Butte	Poe	Butte
Coleman	Shasta	Potter Valley	Mendocino
Colgate	Yuba	Rock Creek	Plumas
Cow Creek	Shasta	Salt Springs	Amador
Crane Valley	Madera	San Joaquin #1-A	Madera
Cresta	Butte	San Joaquin #2	Madera
Deer Creek	Nevada	San Joaquin #3	Madera
De Sabla	Butte	South	Tehama
Drum	Placer	Spaulding #1	Nevada
Dutch Flat	Placer	Spaulding #2	Nevada
Eldorado	Eldorado	Spaulding #3	Nevada
Electra	Amador	Spring Gap	Tuolumne
Haas	Fresno	Stanislaus	Tuolumne
Halsey	Placer	Tiger Creek	Amador
Hamilton Branch	Plumas	Tule	Tulare
Hat Creek #1	Shasta	Volta	Shasta
Hat Creek #2	Shasta	West Point	Amador
Inskip	Tehama	Wise	Placer
Junction City	Trinity	Wishon	Madera
Kerckhoff	Fresno		

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