



**U.S. Department of the Interior  
Office of Inspector General**

## **SPECIAL REPORT**

**COST OF CONSTRUCTION OF EMPLOYEE HOUSING  
AT GRAND CANYON AND YOSEMITE  
NATIONAL PARKS,  
NATIONAL PARK SERVICE**

**REPORT NO. 97-I-224  
DECEMBER 1996**



# United States Department of the Interior

OFFICE OF INSPECTOR GENERAL  
Washington, D.C. 20240

DEC 11 1996

## MEMORANDUM

TO: The Secretary

FROM: Wilma A. Lewis  
Inspector General

SUBJECT SUMMARY: Final Special Report for Your Information - "Cost of Construction of Employee Housing at Grand Canyon and Yosemite National Parks, National Park Service" (No. 97-I-224)

Attached for your information is a copy of the subject final special report. At the request of a member of the Congress, we reviewed the costs associated with constructing employee housing at Grand Canyon and Yosemite National Parks. The objective of the audit was to determine the costs of constructing housing at the two parks and to determine whether the National Park Service constructed "employee only" recreation areas on public lands in El Portal, California.

Based on our review of Park Service records, we determined that the total cost of planning, designing, developing infrastructure for, and constructing 23 single-family houses at Grand Canyon National Park and 34 apartments and 19 single-family houses at Yosemite National Park was \$29.2 million. On a per house basis, the average costs of a single-family home were \$390,000 and \$584,000 at Grand Canyon and Yosemite National Parks, respectively. In contrast, we estimated the cost of private sector housing construction for a single-family house to range from \$115,000 to \$232,000 near Grand Canyon National Park and from \$102,000 to \$250,000 near Yosemite National Park. Further, realtors near the parks stated that 1,200 to 5,000 square-foot homes near Grand Canyon National Park were selling for about \$125,000 to \$289,000 and that sales prices near Yosemite ranged from about \$80,000 to \$300,000 for 1,200 to 2,400 square-foot homes.

We also reported that Park Service officials had testified before the Subcommittee on Interior and Related Agencies, Committee on Appropriations, House of Representatives, regarding the "high" costs associated with constructing housing at Grand Canyon and Yosemite National Parks. According to Park Service testimony, the high housing costs were related to the environmental and "quality" aspects designed into the homes. Our review confirmed that the designs and materials used to achieve these aspects, such as energy efficiency, low maintenance, and durability, contributed to the higher costs of construction.

Furthermore, we found that the recreation facilities being constructed on public lands in El Portal will not be designated for exclusive use by Park Service employees but will be available for use by the general public, the local community, and area schools.

We recommended that the Park Service review its strategy for meeting its housing needs, particularly at these two parks, to ensure that housing is designed and constructed in a cost-effective manner. Although the Park Service concurred with the recommendation, we believe that it should have specifically described actions it would take to reduce or contain housing construction costs rather than focusing on attempting to justify the high costs it incurred for housing construction at the two parks. As such, we requested that the Park Service reconsider its response to the recommendation.

If you have any questions concerning this matter, please contact me at (202) 208-5745 or Mr. Robert J. Williams, Acting Assistant Inspector General for Audits, at (202) 208-4252.

Attachment



W-IN-NPS-001-96

# United States Department of the Interior

OFFICE OF INSPECTOR GENERAL  
Washington, D.C. 20240

Memorandum

DEC - 6 1996

To: Assistant Secretary for Fish and Wildlife and Parks

From: Robert J. Williams *Robert J. Williams*  
Acting Assistant Inspector General for Audits

Subject: Special Report on the Cost of Construction of Employee Housing  
at Grand Canyon and Yosemite National Parks, National Park  
Service (No. 97-I-224)

This report presents the results of our review of costs associated with constructing employee housing at Grand Canyon and Yosemite National Parks. We conducted the review in response to a request from a member of the Congress who asked that we evaluate the "excessive costs" of employee housing in the two parks and the construction of employee-only recreation areas on public lands.

Based on our review of Park Service records, we determined that the total cost of planning, designing, developing infrastructure for, and constructing 23 single-family houses at Grand Canyon National Park and 34 apartments and 19 single-family houses at Yosemite National Park was \$29.2 million. On a per house basis, the average costs of a single-family home were \$390,000 and \$584,000 at Grand Canyon and Yosemite National Parks, respectively. (These averages were derived from actual and future estimated total costs.) In contrast, we estimated the cost of private sector housing construction for a single-family house to range from \$115,000 to \$232,000 near Grand Canyon National Park and from \$102,000 to \$250,000 near Yosemite National Park. To further put these costs in perspective, realtors near the parks stated that 1,200 to 5,000 square-foot homes near Grand Canyon National Park were selling for about \$125,000 to \$289,000 and that sales prices near Yosemite ranged from about \$80,000 to \$300,000 for 1,200 to 2,400 square-foot homes.

We also reported that Park Service officials had testified before a Congressional Subcommittee regarding the "high" costs associated with constructing housing at Grand Canyon and Yosemite National Parks. According to Park Service testimony, the high housing costs were related to the environmental and "quality" aspects designed into the homes. Our review confirmed that the designs and materials used to achieve these aspects, such as energy efficiency, low maintenance, and durability, contributed to the higher costs of construction.

Furthermore, we found that the recreation facilities being constructed on public lands in El Portal will not be designated for exclusive use by Park Service employees

but will be available for use by the general public, the local community, and area schools.

In the October 18, 1996, response (Appendix 4) to the draft report from the Acting Deputy Director, National Park Service, the Park Service stated that “both Grand Canyon and Yosemite National Parks have established their employee housing needs at a level consonant with the operational needs of each respective park.” The Park Service also said that our report does not accurately portray the “extraordinary” costs of building on National Park Service land, which, according to the Park Service, increased the cost of constructing single-family houses at Yosemite National Park by \$236,298 per house. The Park Service further stated that it agreed with and had implemented our recommendation to ensure that the two parks are meeting their housing needs in a cost-effective manner. In that regard, the Park Service provided information on actions it is taking to address its housing needs that it said constituted implementation of the recommendation. However, we concluded that the Park Service’s response was an attempt to justify the high costs it incurred for housing construction at Grand Canyon and Yosemite National Parks as appropriate to the Federal Government rather than specifically describing actions it would take to reduce or contain housing construction costs. Now that Federal guidance does not specify a limit on housing construction costs, we believe that it is imperative that the Park Service focus its efforts on meeting its housing needs in a cost-effective manner. As such, we request that the Park Service reconsider its response to the recommendation (see Appendix 5).

In accordance with the Departmental Manual (360 DM 5.3), we are requesting a written response to this report by February 21, 1997. The response should provide the information requested in Appendix 5.

The legislation, as amended, creating the Office of Inspector General requires semiannual reporting to the Congress on all audit reports issued, actions taken to implement audit recommendations, and identification of each significant recommendation on which corrective action has not been taken.

We appreciate the assistance of National Park Service personnel during the conduct of our review.

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# INTRODUCTION

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## BACKGROUND

Since its inception in 1916, the National Park Service has had a tradition and a Congressional mandate to provide some of its employees with housing. As of January 1996, the Park Service had a housing inventory of about 5,200 units.<sup>1</sup> Some of this housing was either transferred to or acquired by the Park Service as each park was authorized by the Congress, but the majority of the employee housing was constructed during the 1920s and 1930s and between 1956 and 1966. Since the late 1970s, the Park Service has classified much of its housing as unsafe, substandard, and overcrowded and has sought Congressional funding for a Servicewide employee housing initiative program to address this critical problem. From 1989 through 1995, the Congress appropriated over \$80 million to alleviate critical housing conditions Servicewide. Of this amount, about \$38.1 million has been used for planning, designing, and constructing new employee housing at Grand Canyon and Yosemite National Parks (see Appendix 1).

### Grand Canyon National Park

Grand Canyon National Park, located in northern Arizona, has provided housing to most of its employees since the Park was established in 1919. As of January 1996, the Park had 344 units to house its 210 permanent and 160 seasonal employees. According to the Park Service, it is necessary to have these units in the Park because of the remote location of the Park. Various Park Service reports have identified housing shortages and unsafe and substandard housing conditions as critical problems within the Park. Based on these conditions, the reports identified a need for an additional 253 employee housing units to replace and/or supplement units necessary to house permanent and seasonal employees. One of the reports also noted that existing housing had “inadequate electrical wiring . . . rotted floors from leaking pipes; leaky roofs; old, unsafe, inefficient furnaces; [and] rodent, termite and other pest problems; etc.” Since 1991, the Park has been provided \$14 million to construct new housing for its employees.

### Yosemite National Park

Yosemite National Park, located in central California, has provided its employees with housing since it was established in 1890 because of the generally remote location of the Park. Employee housing is currently located in Yosemite Valley, Wawona, Hodgdon Meadows, Crane Flat, Tuolumne Meadows, and El Portal, California. As of January 1996, the Park reported that 433 housing units were available to house its 390 permanent and 120 seasonal employees. From 1980 through 1995, the Park’s General Management Plan and various assessment reports identified housing shortages and unsafe and substandard employee housing, such as deteriorated trailers

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<sup>1</sup>As defined by the Park Service, a housing unit is a single-family house, one-half of a duplex, an apartment, a townhouse, a trailer, a dormitory room, or a place for one employee to live.

and tent cabins, in the Valley and in the nearby communities. During 1995, about 100 permanent employees' offices were transferred from the Valley to the Park's administrative site in El Portal. Since 1991, approximately \$15.4 million has been provided to construct new housing for employees at the Park.

## **Denver Service Center**

The Park Service's Denver Service Center is the lead office within the Park Service for planning, designing, and overseeing construction for projects that are included in the Park Service Line Item Construction Program, including housing projects. These activities, which are funded under a separate Park Service appropriation and carried out by either contract or in-house personnel, include performing advanced planning for technical investigations; conducting land surveys; preparing architectural, landscape, and construction drawings and specifications, final cost estimates, and contract bid documents; and providing on-site construction supervision. From October 1990 through January 1996, the Center expended approximately \$8.7 million for the planning, design, and oversight activities related to employee housing at Grand Canyon and Yosemite National Parks.

## **OBJECTIVES AND SCOPE**

The objectives of our review were to determine the costs of constructing employee housing at Grand Canyon and Yosemite National Parks and to determine whether the Park Service constructed "employee-only" recreation areas on public lands in El Portal. We conducted our review from October 1995 through August 1996 at Grand Canyon and Yosemite National Parks, the Park Service's Pacific West Regional Office, and the Park Service's Denver Service Center.

To accomplish the objective relating to housing costs, we reviewed housing program activities for Grand Canyon and Yosemite National Parks for fiscal years 1991 to 1996, which included: (1) applicable laws, Office of Management and Budget circulars, and Departmental and Park Service guidelines pertaining to the authorization and construction of employee housing; (2) general management and housing management plans and designing and planning documents; and (3) costs incurred and estimated to be incurred by the Park Service for planning, surveying, designing, supervising, and building the employee housing at both parks. In addition, we interviewed Park Service officials responsible for the construction and management of the housing program at the parks, as well as Park Service officials at the Pacific West Regional Office, the Denver Service Center, and the Park Service's Washington Office. We also obtained information on the cost of constructing houses in the private sector and on sales prices of homes in areas near Grand Canyon and Yosemite National Parks from the following: (1) city and county planners, building inspectors, land developers, private home builders, and realtors in Coconino County in Northern Arizona (including the Cities of Williams and Flagstaff, which are the closest to Grand Canyon National Park) and the Counties of Mariposa, Merced, and Tuolumne in Central California (including the City of Mariposa), which are closest to Yosemite National Park; (2) the Bureau of Census and the Construction Industry Research Board for estimates of planned construction



costs required to obtain a building permit; (3) the National Association of Home Builders publication “Builders Survey of Construction Costs,” published in 1995; and (4) the electronic publication “Money On Line,” prepared by Time, Incorporated. From the Federal sector, we obtained information on the construction of employee and family housing from the Bureau of Indian Affairs, U.S. Department of the Interior; the U.S. Department of Housing and Urban Development; and the U.S. Army Corps of Engineers.

Regarding “employee-only” recreation areas, we reviewed applicable laws, visited the sites, interviewed Park Service officials, and discussed the use of these facilities with local community leaders to determine whether the general public could use these facilities.

## **PRIOR AUDIT COVERAGE**

While the Office of Inspector General has not performed an audit of the Park Service’s employee housing program within the last 5 years, the General Accounting Office has issued two reports on the conditions and need for employee housing as follows:

The report “Condition of and Need for Employee Housing” (No. GAO/RCED-93-192), issued in September 1993, concluded that 40 percent of the Park Service’s housing units were classified in good or excellent condition, 45 percent were classified in fair condition but required maintenance ranging from replacing appliances to making minor structural repairs, and 15 percent were classified in poor to obsolete condition and required extensive repairs. In addition, the General Accounting Office found that the Park Service did not adequately justify its need for 12 percent of the employee housing inventory and that the accuracy of the Park Service’s estimate of the housing maintenance backlog could not be verified. The General Accounting Office recommended that Park Service officials reassess the need for all permanent housing units, develop a strategy to eliminate those units that were not needed, prepare a repair and/or replacement estimate to maintain the units that were needed, and develop a plan to close the differences between rental income and maintenance costs.

- The report “Reexamination of Employee Housing Program Is Needed” (No. GAO/RCED-94-284), issued in August 1994, concluded that, even when housing needs were clearly defined and the housing inventory at the parks was reduced to the greatest extent possible, the Park Service needed to further explore other opportunities to help finance its housing program. The report also stated that Park Service officials could explore ways to move employees out of Park Service housing and into available housing in local markets and pursue alternative financing arrangements for repairing, rehabilitating, and replacing housing units. The General Accounting Office recommended that the Park Service conduct a park-by-park review of housing needs to determine whether its current inventory at each location was needed and justified. The General Accounting Office also recommended that the Park Service review the housing alternatives identified by the General Accounting Office from the employee housing studies, evaluate and compare their

respective costs and benefits, develop a strategy for implementing the alternatives considered to be the most effective, and present the strategy to the Park Service's legislative and appropriations committees in the Congress.

During our review, Park Service officials informed us that the Park Service had initiated several actions in response to the recommendations made in the General Accounting Office reports. Park Service officials told us that the Park Service, in 1994, started an "in-house" needs assessment review of housing requirements at 36 park areas (including Grand Canyon and Yosemite National Parks). These officials further stated that the effort was ongoing and was expected to be completed in 1997. In July 1995, the Park Service, in conjunction with the Bureau of Indian Affairs, contracted with an independent consulting firm to review four parks in detail to better document the repair and rehabilitation backlog that was identified. In addition, in January 1996, the Park Service requested that the Department's Quarters Office, which is under the Bureau of Reclamation, review the various factors that impact upward adjustments to housing rental rates, which are limited by the Congress. Further, the Park Service had initiated the process of establishing "partnerships" with outside groups, such as the National Park Foundation, to improve employee housing conditions.

## DISCUSSION

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The Park Service decided to build high quality, energy efficient, single-family homes, which resulted in high-cost employee housing and unmet housing needs. We found that the total estimated cost of planning, designing, developing infrastructure (roads, utilities, and building sites) for, and constructing 23 single-family houses at Grand Canyon National Park and 34 apartments and 19 single-family houses at Yosemite National Park was \$29.2 million. Based on the total costs, we estimated that the cost to build a single-family home at Grand Canyon National Park ranged from \$337,000 (1,258 square feet) to \$473,000 (1,764 square feet), or an average of \$390,000, while at Yosemite National Park the range was from \$425,000 (1,267 square feet) to \$681,000 (2,030 square feet), or an average of \$584,000. In contrast, we estimated that the total cost to construct an 1,800 square-foot, three-bedroom house<sup>2</sup> in the private sector ranged from \$115,000 to \$232,000 near Grand Canyon National Park and from \$102,000 to \$250,000 near Yosemite National Park. To further put these costs in perspective, we obtained, from realtors near the parks, information on sales prices for housing in the local areas. The realtors provided information which showed that sales prices for a 1,200 to 5,000 square-foot home in the Grand Canyon National Park area ranged from about \$125,000 to \$289,000 and that sales prices near Yosemite ranged from about \$80,00 to \$300,000 for 1,200 to 2,400 square-foot homes. Additionally, Park Service officials chose to build primarily single-family homes instead of multi-family housing units to meet the housing needs. As a result, approximately 50 permanent and 100 seasonal employees at Grand Canyon National Park and at least 70 seasonal employees at Yosemite National Park will still be living under the same conditions that prompted the funding for the employee housing.

Also, we found that the recreation areas being constructed by the Park Service at Yosemite's El Portal administrative site will not be restricted to employees but will be available for use by the general public, the local community, and area schools.

### **Guidelines for Construction**

In January 1988, the Department of the Interior issued a final rule amending Title 41, Part 114-51, of the Code of Federal Regulations to change its procedures governing the "provision and assignment of government furnished quarters." The final rule stated that it was issued because "changes [were] made necessary by the repeal of Congressional limitations on the costs associated with construction of [government furnished quarters]." The final rule further stated that because of the "rapidly increasing costs of housing," the unit costs of future construction would be identified by agencies in their budget justifications and "controlled through the normal budget process." The final rule also "eliminate[d] the design standards in the

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<sup>2</sup>We chose an 1,800 square-foot home as the basis for our comparative analyses of the cost of housing construction in the local communities, since we believed that this size best represented the larger of the houses being constructed by the Park Service and therefore more fairly shared the costs associated with infrastructure, planning, design, and construction supervision that were allocated on a square-foot basis.

regulations [Code] and substituted] those found in Office of Management and Budget Circular A-18 ["Policies on Construction of Family Housing"], as amended."

In October 1993, the Office of Management and Budget rescinded Circular No. A-18 by merging some of its provisions into the revised Circular No. A-45, "Rental and Construction of Government Quarters," which provides general policies and procedures to guide Federal agencies in determining the rental rates for housing units to be provided employees at a given location. Additionally, Circular No. A-45 does not specify a limit on construction costs. Without cost limitations, we found that the Park Service emphasized the environmental and quality aspects of planning, designing, and constructing housing over the cost aspects. In that regard, Park Service officials stated that the organization had a "tradition" of providing single-family homes to its employees and that they used these homes as "inducements" to recruit and retain employees.

### **Employee Housing at Grand Canyon National Park**

At the time of our review, the Park Service was constructing 59 single-family homes at Grand Canyon National Park. Since construction had not been completed, we could only summarize the estimated costs to construct the first 23 of 59 houses. Based on our review of the Park Service's records, we determined that the total cost, including the costs associated with infrastructure, "line item" house construction, planning, design, and supervision, was approximately \$8.9 million. Based on the total cost, the average cost to construct a single-family employee house was about \$390,000 (\$8.9 million divided by 23 houses), and the per unit cost ranged from \$337,320 to \$472,999, as shown in Table 1.

Table 1. Estimated Costs To Build 23 Single-Family Houses

No. of Units	Unit Square Footage	Unit Costs*				Per Unit Total	Total Cost* *
		Infrastructure	Planning/Design Supervision	House Construction			
3	1,258	\$50,857	\$106,383	\$180,080	\$337,320	\$1,011,960	
5	1,298	52,476	109,765	185,805	348,046	1,740,230	
1	1,327	53,648	112,217	189,957	355,822	355,822	
5	1,461	59,066	123,549	209,138	391,753	1,958,765	
4	1,475	59,631	124,734	211,142	395,507	1,582,028	
2	1,686	68,162	142,576	241,346	452,084	904,168	
<u>3</u>	1,764	71,315	149,172	252,512	472,999	<u>1,418,997</u>	
<u>23</u>						<u>\$8,971,970</u>	

\*As shown in this schedule, we estimated, based on Park Service available records, the per unit costs attributable to the three major components of total cost. These amounts were derived by assigning the costs incurred or estimated to be incurred to the applicable square footage for each housing unit. The amounts allocated were \$1,352,722 for infrastructure; \$2,829,540 for planning, design, and construction supervision; and \$4,789,708 (including \$950,143 in contract cost overruns) for “line item” house construction.

\*\*The total cost for each housing unit was derived by multiplying the units constructed by the per unit total cost.

We found that the former Park Superintendent decided to build 59 single-family homes, even though other Park Service officials from the Denver Service Center and the Pacific West Regional Office had recommended constructing up to 114 housing units composed of a mix of both single-family and multi-family units, such as apartments, town houses, or “cluster” homes, to better meet the Park’s housing shortage and overcrowded, unsafe, and substandard housing conditions. As such, according to Park officials, approximately 50 permanent and 100 seasonal employees at the Park will still be living in deficient housing at the completion of this housing construction.

### Employee Housing at Yosemite National Park

Between March 1993 and June 1996, the Park Service constructed 34 apartments and 19 single-family homes at Yosemite National Park. Since the Park Service has basically completed currently funded housing construction at the Park, we summarized the actual costs to construct the 34 apartments and 19 houses at the Park as of January 1996. Based on our review of Park Service records, we determined that the total cost, including the costs of infrastructure, “line item” house and apartment construction, planning, design, and supervision, was approximately \$9.1 million for the 34 apartment units (Table 2 and Figure 1) and was about \$11.1 million for the 19 single-family homes (Table 3 and Figure 2). Based on the total cost, the average cost to construct a single-family employee house was \$584,000, and the per unit cost ranged from \$425,294 to \$681,410, as shown in Table 3.

Table 2. Apartments

<u>No. of Units</u>	<u>Unit Square Footage</u>	<u>Unit Costs*</u>			<u>Per Unit Total</u>	<u>Total Cost **</u>
		<u>Infrastructure</u>	<u>Planning/Design Supervision</u>	<u>Apartment Construction</u>		
14	740	\$53,163	\$55,737	\$115,953	\$224,853	\$3,147,942
<u>20</u>	1,014	72,848	76,374	147,996	297,218	<u>5,944,360</u>
<u>34</u>						<u>\$9,092,302</u>

\*As shown in this schedule, we estimated, based on Park Service records available, the per unit costs attributable to the three major components of total cost. These amounts were derived by assigning the costs incurred to the applicable square footage for each apartment unit. The amounts allocated were \$2,201,242 for infrastructure; \$2,307,798 for planning, design, and supervision; and \$4,583,262 for "line item" apartment construction.

\*\*The total cost for each housing unit was derived by multiplying the units constructed by the per unit total cost.



**Figure 1.** Apartment building at Yosemite National Park. (Office of Inspector General photograph)

Table 3. Single-Family Houses

No. of Units	Unit Square Footage	Unit Costs*			Per Unit Total	Total Cost* *
		Infrastructure	Planning/Design Supervision	House Construction		
1	1,267	\$90,310	\$95,430	\$239,554	\$425,294	\$425,294
5	1,550	110,482	116,746	293,060	520,288	2,601,440
3	1,675	119,392	126,161	316,694	562,247	1,686,741
6	1,865	132,936	140,472	352,617	626,025	3,756,150
2	1,900	135,430	143,108	359,235	637,773	1,275,546
<u>2</u>	<u>2,030</u>	<u>144,696</u>	<u>152,900</u>	<u>383,814</u>	<u>681,410</u>	<u>1,362,820</u>
<u>19</u>						<u>\$11,107,991</u>

\*We estimated, based on Park Service available records, the per unit costs attributable to the three major components of total cost. These amounts were derived by assigning the costs incurred to the applicable square footage for each housing unit. The amounts allocated were \$2,358,764 for infrastructure; \$2,492,491 for planning, design, and supervision; and \$6,256,736 for "line item" house construction.

\*\*The total cost for each housing unit was derived by multiplying the units constructed by the per unit total cost.



Figure 2. House of 2,030 square feet at Yosemite National Park. (Office of Inspector General photograph)

As documented in the Yosemite Valley Housing Plan, the substandard and overcrowded housing conditions that existed in the Park cannot be addressed by adding only 19 single family homes and 34 apartment units. Annual budget requests for the Park Service from 1991 through 1993 indicated that, in addition to the single-family homes and apartments that were being built, two 40-room dormitories would be constructed in El Portal to provide housing primarily for seasonal employees, most of whom were living in substandard housing in Yosemite Valley. However, the two 40-room dormitories were not built because, according to Park Service officials, the Park Service decided to house seasonal employees in studio apartments rather than in dormitories. As of January 1996, the Park Service had not requested funding to construct these studio apartments. In addition, all 34 apartments were rented by permanent, not seasonal, employees because, according to Park Service officials, of the “quality” and “built-in” features of the units and because housing managers generally preferred the stable incomes associated with renting to permanent employees. Park Service officials also said that the rent (from \$270 to \$376 per month) for the new apartments was too expensive for seasonal employees. As a result, we estimated, based on Park Service records, that after construction of the housing units in El Portal, at least 70 seasonal employees would still live under the same conditions that prompted the funding for the new employee housing.<sup>3</sup>

## **Construction Cost Factors**

We noted that Park Service officials had testified before the Subcommittee on Interior and Related Agencies, Committee on Appropriations, House of Representatives, for fiscal years 1994 and 1995 on the high costs associated with housing at Grand Canyon and Yosemite National Parks. During these hearings, Park Service officials provided reasons as to why they believed the construction costs for the employee housing at these parks were so high and informed the Subcommittee of the estimated average cost of the houses. Specifically, the Park Service testified, among other issues, that the average cost for housing would be \$386,000 at Grand Canyon National Park and \$305,300 at Yosemite National Park. The Park Service testified that the reasons for the “high” costs of construction were related to such factors as the “remote location” of the construction and the environmental and “quality” aspects that were designed into the houses.

In addition to its testimony, the Park Service stated during our review that a primary reason for the high costs of housing at Grand Canyon and Yosemite National Parks was the addition of nonstandard and energy efficient materials to the homes, apartment units, and related infrastructures during the planning and designing processes. The Park Service provided us with a list of items, such as solid core doors, solar water heaters, extra large baths, and commercial-grade floor coverings (see Appendix 2), that were used in constructing the housing. Park Service officials

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<sup>3</sup>According to Alternative E in the *Addendum to the Yosemite Valley Housing Plan, Draft Supplement to the Final Impact Statement for the 1980 General Management Plan*, the Park Service plans to construct five single-family homes at Rancheria Flats and multi-family housing for 108 employees.



told us that the items were necessary for “durability” and “long-term maintenance savings,” energy efficiency, remoteness of sites, fire-resistant and handicap accessibility requirements, noise control in apartments, and landscape enhancements. Park Service officials also told us that energy efficient houses were necessary to aid in the preservation of the environment and to reduce the employees’ costs for energy. However, we were not provided any data or cost-to-benefit analyses during our review to determine and validate the incremental costs or benefits associated with the use of these nonstandard and energy efficient items. On the other hand, we found reports and documents that did question the use of these materials. For example, in notes of a meeting between Yosemite National Park officials and representatives of the contracted architectural and engineering firm, the firm stated, “If some of the top-of-the-line items that the Park is insisting on, i.e., doors and windows, could be lowered a notch in quality, then the unit costs would go down significantly.”

In addition to the use of nonstandard and energy efficient materials, we determined that the Denver Service Center’s costs for planning and supervising the construction of the housing contributed to the high costs of housing at the parks. We identified charges of \$8.7 million for planning, design, and construction supervision costs at both parks. Specifically, we found that as of January 1996, these costs totaled \$3.9 million at Grand Canyon National Park. Of this amount, planning and design costs totaled about \$1.3 million for seven home designs and the 23 home sites.<sup>4</sup> About \$1.1 million was charged for supervising the construction of the first 23 homes, which were 70 percent complete. At Yosemite National Park, costs for planning, designing, and supervising the construction of housing were about \$4.8 million as of January 1996. Of this amount, \$3 million was charged to planning and design, and \$1.8 million was charged to construction supervision for the 34 apartments and 19 houses at the Park. The costs for the 19 houses included costs for construction of recreation facilities. However, we were unable to determine, nor did the Park Service identify, the amounts associated with these facilities, since the costs for these facilities were commingled with the contracts awarded for the construction of the housing.

### **Housing Construction Costs in the Private Sector and at Other Federal Agencies and Sales Prices of Homes Near the Parks**

On June 3, 1996, we provided the Park Service with a preliminary draft of this report. In the Park Service’s June 14, 1996, response, the Associate Director, Professional Services, National Park Service, did not agree with the manner in which the cost information was presented in the preliminary report, stating that the report “bundles three types of expenses and costs, artificially enlarging the housing construction costs to a figure abnormally higher than a similar housing unit constructed in a suburban subdivision.” The response also stated that our report

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<sup>4</sup>Planning and design costs for the 59 homes, which were based on nine different designs, totaled about \$2.8 million as of January 1996. Four additional homesites were planned and designed for concessioner housing at the expense of the Government.

“inflated” the cost of housing by including “specialized” expenses particular to Federal agencies and to the Park Service and therefore did not state the “true” cost of constructing the housing units.

We believe that the Park Service’s comments in this regard are without merit. As stated previously, the Park Service, in its testimony to the Congress in fiscal years 1994 and 1995, openly acknowledged the “high” costs of construction in the parks. By way of example, the Park Service noted that the average cost of housing at Grand Canyon would be about \$386,000, which is only \$4,000 less than our estimate of the same housing. In addition, our review found that Park Service records did not segregate “specialized” expenses from total costs, thus rendering difficult the type of separation of expenses that the Park Service now states is appropriate. Also during our review, we requested that the Park Service provide support for its statement that Park Service per unit construction costs were comparable to those in the private sector. However, the Park Service was not able to provide documentation for this statement.

In any event, in order to provide a more definitive response to the Park Service’s concerns and to place the housing construction costs at Grand Canyon and Yosemite National Parks into even clearer perspective, we obtained information on: (1) housing construction costs incurred by the private sector; (2) expenses particular to Federal agencies; (3) housing construction costs incurred by other Federal agencies; and (4) the prices of homes sold in areas near the parks.

**Private Sector Construction Costs.** According to information provided by the National Association of Homebuilders, we estimated that the national average cost of constructing an 1,800 square-foot single-family house (including infrastructure) within the United States in 1995 was about \$125,000.<sup>5</sup> In addition, based on information provided to us by local officials and land developers near both parks, we derived two estimates of the costs to construct an 1,800 square-foot house: an estimate to construct a “good” quality house that would exceed national standard building codes and an estimate to construct an “excellent” quality house, which incorporated additional high quality material and workmanship in the construction. Using this information, we then estimated that the private sector construction costs, including design, planning, infrastructure, supervision, and profit, would range from \$115,000 to \$232,000 near Grand Canyon National Park and from \$102,000 to \$250,000 near Yosemite National Park.

Regarding the cost of constructing infrastructure near the two parks, city and county officials and private land developers told us that these costs (building roads or extending water and sewer systems) were borne by the land developers or the individual home builders and were not funded by local governments. Therefore, despite the Park Service’s position that general site improvements were not financed and constructed by the private sector home builder, we believe that it was

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<sup>5</sup>The \$125000 does not include costs of land, capital, selling expenses, or profit, which also were not included in our estimates of housing constructed by the Park Service.

appropriate to include the infrastructure expenses in the overall costs of constructing the employee housing units.

**Specialized Expenses Particular to Federal Agencies.** In commenting on our preliminary draft report, the Park Service said that there were nine factors particular to Federal construction that increased the cost of construction: Davis Bacon Act wage adjustments, Buy American Act procurement requirements, archaeological study requirements, Endangered Species Act requirements, remote location cost adjustments, unusual site conditions, Small Business Administration Minority Program procurement requirements, Americans With Disabilities Act access requirements, and fire suppression requirements. However, the Park Service did not provide us with cost records that would be necessary to identify the additional costs associated with these factors. Therefore, we estimated the increased costs associated with these nine factors based on information obtained from other Federal agencies and private land developers. Our estimates of the additional costs associated with these factors to build an 1,800 square-foot home in the private sector near both parks are shown in Table 4.

**Table 4. Specialized Federal Expenses**

Description	Grand Canyon National Park	Yosemite National Park
Davis-Bacon Wages <sup>1</sup>	0	\$64,559
Buy American Act <sup>2</sup>	0	0
Archaeological Studies <sup>3</sup>	0	0
Endangered Species Act <sup>3</sup>	0	0
Remote Location <sup>4</sup>	\$9,198	17,766
Unusual Site Conditions <sup>5</sup>	0	5,976
Requirements of Small Business Administration Minority Program <sup>2</sup>	0	0
Americans With Disabilities Act <sup>6</sup>	2,646	2,592
Fire Suppression <sup>7</sup>	<u>3,600</u>	<u>3,600</u>
Combined Totals	<u>\$15,444</u>	<u>\$94,493</u>

We did not increase wage costs at Grand Canyon because local wage rates in that area generally exceeded the Davis-Bacon wage rates. For the Yosemite area, the Davis-Bacon wages generally exceeded local wage rates for some construction workers, and we increased wages to 200 percent based on the Park Service's statement that Davis-Bacon wage rates were 200 percent higher than local rates.

<sup>1</sup>Based on discussions with representatives of other Federal agencies, we believe that the additional costs associated with the requirements of the Buy American Act and the Small Business Administration Minority Program are minimal.

<sup>3</sup>Based on discussions with private contractors, land developers, and representatives of other Federal agencies, we did not increase costs at either park because we believe that home builders in the private sector also incur the same costs for performing archeological studies and for complying with the Endangered Species Act.

<sup>4</sup>Based on the "Residential Cost Handbook," we increased the price of the house for the remote location--\$5.11 times 1,800 square feet at Grand Canyon and \$9.87 times 1,800 square feet at Yosemite.

<sup>5</sup>Based on the "Residential Cost Handbook" we increased the price for constructing houses on hillsides at Yosemite (\$3.32 times 1,800 square feet).

<sup>6</sup>Based on discussions with representatives of other Federal agencies, we provided for a 2 percent increase to the base price of the house--\$1.47 times 1,800 square feet at Grand Canyon and \$1.44 times 1,800 square feet at Yosemite.

<sup>7</sup>Based on discussions with representatives of the private sector and other Federal agencies, we increased the price of the house (\$2.00 times 1,800 square feet).

Including these specialized Federal expenses in our estimate of private sector construction costs to build both a good and a high quality home resulted in costs ranging from \$130,500 to \$247,500 near Grand Canyon National Park and from \$196,500 to \$344,500 near Yosemite National Park.

**Other Federal Agency Housing Construction Costs.** We also contacted representatives of other Federal agencies to obtain information on their respective costs of constructing employee and family housing. Although these examples do not directly compare Park Service housing with that of other Federal agencies, these examples do represent the average costs that other Federal agencies are incurring in attempts to meet their respective housing needs. Also, agency representatives told us that they were required to comply with many of the same "specialized expenses particular to Federal agencies." The housing costs ranged from \$105,000 to \$150,000 for single-family houses, as shown in Table 5.

**Table 5. Cost of Employee and Family Housing at Other Federal Agencies**

<u>Department</u>	<u>Type of Housing</u>	<u>Cost</u>	<u>Comments</u>
Interior, Bureau of Indian Affairs	3 bedroom (single family)	\$150,000 <sup>1</sup>	Does not include "off-site" infrastructure or construction supervision.
Housing and Urban Development, Indian Development Program	5 bedroom (single family) <sup>2</sup>	\$144,410	Does not include "off-site" infrastructure costs.
Defense, U.S. Army Corps of Engineers	2, 3, and 4 bedroom (multi-family) <sup>3</sup>	\$105,000	Includes all costs for planning, designing, constructing, supervising construction of, and completing off-site infrastructure and recreation facilities.

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<sup>1</sup>This estimate, which was based on information provided by Departmental officials, represents the average cost nationally of constructing a single-family home for eligible recipients within the Bureau of Indian Affairs.

<sup>2</sup>Constructed in 1992 on the Havasupai Reservation, Peach Springs, Arizona.

<sup>3</sup>Constructed in 1994 at Fort Irwin, Barstow, California.

Housing constructed by the Corps of Engineers consisted of 220 multi-family housing units (110 duplexes) (see Figure 3) and infrastructure such as roads, utilities, water and sewer facilities, basketball courts, sports fields, a sand volleyball court, picnic shelters, and tot lots. At an average of \$105,000 per unit, the project was completed for a total cost of \$23.2 million.



**Figure 3.** A duplex constructed by the U.S. Army Corps of Engineers. (Office of Inspector General photograph)

**Home Sales Prices.** Realtors near Grand Canyon National Park indicated that the average price of an 1,800 square-foot home selling in the Flagstaff, Arizona, area (79 miles away) was about \$175,000. A realtor in Williams, Arizona, which is about 60 miles south of Grand Canyon, told us that the average size of the homes ranged from 1,200 to 1,500 square feet and that the homes, when available, were selling for about \$125,000. In addition, the sales prices of a 2,000 square-foot home and a 5,000 square-foot home were \$155,000 and \$289,000, respectively. Further, according to the electronic publication “Money On Line,” the median prices of a three-bedroom home in Flagstaff and Phoenix, Arizona (217 miles away), were \$130,000 and \$115,000, respectively.

A realtor near Yosemite National Park in Merced, California (68 miles away), stated that the sales prices for 1,750 to 1,850 square-foot homes ranged from \$85,000 to \$195,000 in 1995. In addition, we reviewed a publication entitled “Home Search,” produced by the Merced County Realtor Association, and another home advertisement publication for the areas of Catheys Valley (45 miles away) and Mariposa (30 miles away). The publications indicated that sales prices, which generally included 3 to 5 acres of land, ranged from \$80,000 to \$300,000 for 1,200 to 2,386 square-foot homes, respectively. For example, we noted a 1,200 square-foot home on 1 acre of land selling for \$79,500; a 1,500 square-foot home on 5 acres selling for \$159,000; a 1,578 square-foot home with horse facilities on 5 acres of land selling for \$199,500; a 2,060 square-foot three-bedroom home on 14 acres of land selling for \$229,000; and a 2,386 square-foot home on 5 acres of land selling for \$299,500. In addition, according to “Money On Line,” the median prices of three-bedroom homes in Merced and Modesto, California (95 miles away), were \$91,000 and \$113,000, respectively.

## **Summary**

Grand Canyon and Yosemite National Parks built high-cost residences for park employees. Specifically, as detailed in Appendix 3, the total costs (including infrastructure) for the Park Service to construct 1,800 square-foot homes at Grand Canyon and Yosemite National Parks were \$473,000 and \$626,000, respectively. In contrast, we estimated that the average cost nationally to build an 1,800 square-foot home was \$125,000. In addition, we estimated that the private sector construction costs adjusted for the specialized expenses identified by the Park Service for an excellent quality home, which incorporated cost factors for high quality materials and workmanship, were \$247,500 and \$344,500, respectively, at Grand Canyon and Yosemite. Further, realtors' estimates of sales prices for houses of comparable size in areas near Grand Canyon and Yosemite were \$175,000 and \$195,000, respectively.

In addition, after completion of the 59 single-family houses at Grand Canyon National Park and the 34 apartment units and 19 single-family homes at Yosemite National Park, the parks' housing needs have not been met. In that regard, the Park Service, in response to the August 1994 audit by the General Accounting Office, said that it is conducting a needs assessment of housing requirements at 36 park areas, including Grand Canyon and Yosemite. Given the options for meeting housing needs (for example, constructing single-family homes, multi-family homes, apartments, or dormitories or purchasing homes in local markets), as well as the individual park's preferences for housing and Federal guidance that does not specify a limit on construction costs, we believe that the Park Service should closely monitor housing construction at its parks in conjunction with completion of the needs assessment to ensure that housing needs are fully met in a cost-effective manner.

### **Recreation Facilities at El Portal**

At the time of our review, the Park Service was also constructing recreation facilities in the same vicinity as the houses under construction at El Portal. The facilities under construction included a baseball and soccer field, an outside basketball court, and a tot play area (Figure 4).



**Figure 4.** *A tot lot, basketball court, tennis court, and playfield at El Portal. (Office of Inspector General photograph)*

Although these facilities were being constructed on Federally owned land within Yosemite National Park’s administrative site, we determined that the Park Service did not intend to restrict the use of these areas to Park Service employees. According to Park Service officials and local community leaders, these facilities will be available for recreation use by the general public, the local community, and area schools. In addition, the legislative history which supports the Yosemite National Park-Administrative Site-Acquisition Act of 1958 (Public Law 85-922) stated that the Director of the National Park Service “assured the committee that the public will not be barred from fishing and other recreational pursuits in and along the river flowing through the administrative site.” (Emphasis added.) We estimated that these facilities represented about 2 to 3 acres of the 1,200 acres set aside for the administrative site at El Portal.

### **Recommendation**

We recommend that the Director, National Park Service, review the strategy that the parks, particularly Grand Canyon and Yosemite National Parks, have for meeting their employee housing needs to ensure that housing is designed and constructed in a cost-effective manner.

### **National Park Service Response and Office of Inspector General Reply**

In the October 18, 1996, response (Appendix 4) to the draft report from the Park Service’s Acting Deputy Director, the Park Service agreed with the recommendation and said that the information provided would “evidence the implementation” of the



recommendation. The response included as attachments comments from the Superintendents of Grand Canyon and Yosemite National Parks; the Acting Director, Denver Service Center; and the Park Service's housing program manager. However, based on the information contained in the Park Service's response, the recommendation is unresolved, and the Park Service is requested to reconsider its response to the recommendation (see Appendix 5).

## **Comments on Special Report**

The Park Service provided a lengthy response (34 pages) to the draft report that contained information not previously provided to us and comments on some of the specific text presented in the draft report. We modified the report as appropriate based on the Park Service's comments. Furthermore, our reply to those aspects of the Park Service's response that we believe have the most significance is presented below.

### **Introductory Remarks**

**Park Service Response.** The Park Service noted at the outset that “like other ordinary people, the Park’s employees expect standard, comfortable homes with normal amenities and facilities such as are used in day-to-day living.”

**Office of Inspector General Reply.** We agree. The issue, however, is what it should cost to provide “standard, comfortable homes with normal amenities and facilities such as are used in day-to-day living.” When compared with private sector and other Federal agency housing, the significantly greater cost of Park Service housing at the two parks reviewed suggests that the Park Service is not in fact building “standard, comfortable homes with normal amenities and facilities,” but rather high cost, high quality homes. The Park Service did not provide information or documentation that would refute that suggestion.

### **Cost of Housing at Yosemite National Park**

**Park Service Response.** The Park Service stated that our report:

. . . fails to accurately and fully identify all the extraordinary costs which the Park [Yosemite National Park] identified . . . . These costs total \$4,489,662 . . . and are costs which a private home construction company would not expend because these costs are extraordinary to the Federal government and to the National Park Service under current law. . . . The important distinction drawn here is that these extraordinary expenses attach to construction on NPS [National Park Service] lands, because of the laws which Congress has enacted. [Emphasis in original.]

The Park Service said that it does “not concur with the costs identified as ‘Specialized Federal Expenses’ listed in Table [4].” The Park Service further stated that “[t]he increased costs per house for Yosemite NP [National Park] should be \$236,298 rather than \$94,493.” In that regard, the Park Service concluded that the

\$236,298 was the estimated cost of complying with requirements associated with building on National Park Service lands (including matters such as preparation of an environmental assessment and related site surveys for archeological sites and for threatened/endangered species and preparation of environmental compliance documentation required by the National Environmental Policy Act). Regarding the \$4,489,662 (which the Park Service computed by multiplying \$236,298 by the 19 houses built at Yosemite National Park), the Park Superintendent broke down those costs by category as follows: unusual site conditions -\$ 1,358,500; cultural and natural resource compliance and monitoring - \$327,370; Americans With Disabilities Act requirements - \$49,248; larger capacity water tank and fire suppression systems - \$504,393; propane distribution system - \$62,985; remote location - \$337,554; Davis-Bacon wage rates - \$1,226,621; and recreational facilities and open space -\$622,991.

**Office of Inspector General Reply.** Although in its response the Park Service describes at length the various categories of costs that it considers to be “extraordinary costs” related to construction on national park lands, there is no explanation in the response as to how the “extraordinary cost” estimates were derived. During our review, we examined the bid abstracts and other Park Service documentation for the housing construction contracts in an attempt to identify the extraordinary costs that are peculiar to the Park Service. However, the documentation did not break out or identify this information. Also, when we repeatedly requested that park managers provide us with information on the Park Service’s increased costs associated with the nine categories of specialized expenses that the Park Service had identified (see Table 4), they said that the information was not available. Therefore, we were not able to determine the validity of the Park Service’s estimates of its extraordinary costs, which now include costs for two categories--( 1) site utilities and (2) recreational facilities and open space--not identified by the Park Service during our review.

Had the Park Service provided this information to us during our fieldwork, together with an explanation of how the numbers were derived, we would have attempted to determine the validity of the estimates. For example, the Park Service’s computation includes \$71,500 per house (\$1,358,500 in total) for unusual site conditions. In this case, we would have attempted to determine whether the Park Service could have used different building techniques to reduce costs, whether Federal requirements restricted building sites to those selected, and whether the computation included only properly allocable costs. In another instance, the Park Service added \$32,789 per house (\$622,991 in total) for recreational facilities and open space. While we recognize the importance of recreational facilities, especially to individuals living in isolated communities, we would have attempted to determine the validity of the amount presented, as well as to determine whether this amenity can properly be considered an “extraordinary” Federal expense.

In the absence of the requested information from the Park Service, we developed a table of Specialized Federal Expenses for the nine categories of expenses identified by the Park Service (Table 4). We estimated the costs associated with these categories based on information obtained from other Federal agencies, private land developers, and reference materials. Our presentation was intended to provide our

best estimate, based on the sources consulted and in the absence of more specific information, of the increased costs over normal construction costs associated with complying with Federal regulations on sites similar to those on which Park Service housing was constructed. Our conclusion was that specialized Federal expenses should increase the cost of construction at Yosemite National Park by \$94,493 per single-family home. (Our presentation was not intended to identify the costs actually incurred by the Park Service for these categories.)

If, as the Park Service states, the cost of constructing single-family housing on Park Service lands at Yosemite National Park added \$236,298 rather than \$94,493 to each home, we believe that the Park Service should have opted for alternative housing, such as multi-family housing. Moreover, assuming that the Park Service's estimates are accurate, even a cost of \$348,000 (average cost per house of \$584,000 minus the Park Service's estimate of Federal expenses of \$236,000) is high when compared with the \$102,000 to \$250,000 range in the private sector for building single-family homes in the same area.

### **Bids of Competing Contractors**

**Park Service Response.** The Park Service stated that the report does not consider the competing contractors' bids as "fair competitive examples of equivalent cost comparisons for the construction of housing" in Yosemite and Grand Canyon National Parks. In that regard, the Park Service stated:

We take the position that open competition by housing construction firms, bidding on a uniform set of specifications which apply to the Park, is the only proper theater of cost comparison because the natural incentives of such competition serve as independent controls that establish the reasonable range of costs for the construction specifications identified. . . . The OIG draft special report gives no explanation as to why it failed to compare competitive bids we received and have in file to establish the reasonable level of cost we have experienced under current Federal laws. This seems elemental to us. [Emphasis in original.]

**Office of Inspector General Reply.** We strongly disagree with the statement that "bidding on a uniform set of specifications which apply to the Park, is the only proper theater of cost comparison." Indeed, such a statement by the Park Service suggests a fundamental misunderstanding of the issue. As the Park Service acknowledges, the bids provide a range of costs for "the construction specifications identified." In other words, the bids merely indicate the range of proposed costs that prospective contractors offer in response to bid specifications for the particular type of housing requested by the Park Service. For example, if the specifications for housing at Yosemite National Park had called for 5,000 square-foot single-family homes instead of 1,200 to 2,000 square-foot homes, the bids would have been higher. Conversely, a representative of the contracted architectural and engineering firm (see section "Construction Cost Factors") stated that "if some of the top-of-the-line items that the Park is insisting on, i.e., doors and windows, could be lowered a notch in

quality, then the unit costs would go down significantly.” (Emphasis added). In addition, the bids do not provide any related information on the alternatives to building single-family homes or on the reasonableness or efficiency of the design. Thus, far from being “the only proper theater of cost comparison”--let alone “elemental”--we believe it would be virtually useless to rely on bidding information to determine whether the cost of Park Service housing is higher than it should be.

## **Comparisons With the Private Sector and With Other Federal Agencies**

**Park Service Response.** The Park Service stated:

[T]he OIG [Office of Inspector General] draft special report only offers non-comparable comparisons to the housing construction on non-NPS [National Park Service] (private) lands and to some Federal housing (by other agencies on non-NPS lands) which the OIG report admits “. . . these examples do not directly compare. . . .”

**Office of Inspector General Reply.** As stated in our report, we presented the information on private and other Federal agency construction costs in response to a Park Service comment to a preliminary draft of this report. The Park Service had stated:

To fairly represent the modest types of housing which NPS [the National Park Service] is constructing, your final report should not include the Federal construction overhead and the NPS mission/infrastructure expenses in per unit average costs. By doing this, your final report would establish a per unit construction cost comparable to that found in the Private sector, thus enabling the reader to determine the reasonable level of NPS investment. [Emphasis added].

In response to that comment and to the extent that cost information was available, we separately identified infrastructure costs related to Park Service housing construction (cost information on Park Service overhead and mission was not available) and included the information on private sector housing to provide the perspective that the Park Service’s initial comment suggested.

We do not agree that the private sector comparisons are “non-comparable.” To the contrary, we believe that the private sector information, which includes estimated costs for constructing “good” and “excellent” quality homes, provides useful and appropriate comparisons provided that certain factors peculiar to the Federal construction are taken into account, as our special report does. Moreover, as previously noted, even if the Park Service’s higher estimates for Federal expenses are accepted, a significant disparity remains between the cost of Park Service housing and that in the private sector. Thus, the private sector comparison, which the Park Service suggested, does not support either the proposition that the Park Service is constructing “modest types of housing” or that the housing costs represent a “reasonable level of NPS [National Park Service] investment.”

In addition to the private sector comparison, we also introduced information on housing constructed by the Bureau of Indian Affairs, the Department of Housing and Urban Development, and the U.S. Army Corps of Engineers. The Park Service's suggestion that the special report acknowledges that "these examples do not directly compare" must be placed in context. The report states, "Although these examples do not directly compare Park Service housing with that of other Federal agencies, these examples do represent the average costs that other Federal agencies are incurring in attempts to meet their respective housing needs." We believe the examples of how some other Federal agencies, which also have to comply with the requirements for building on isolated Federal lands, have met their housing needs is information that the Park Service should find relevant in assessing its own costs. Regarding the Corps of Engineers multi-family housing project, the Park Service stated that the per unit housing cost of \$105,000 for 220 multi-family housing units "supports the benefits of the economy of scale for the construction of large scale housing projects." Given these circumstances, we believe that, instead of focusing on the construction of single-family homes, the Park Service should consider constructing more apartments and multi-family homes.

### **Cost of Grand Canyon Homes**

**Park Service Response** The Park Service stated that based on Denver Service Center records, its computation of the average price per single-family home at Grand Canyon National Park is \$338,359 as opposed to the per home price of \$390,000 presented in our special report. The Park Service also stated:

Even \$338,359 is high for a relatively small single family home. We believe there are three categories of factors which contribute to these costs being higher than new homes in surrounding communities: construction on NPS [National Park Service] lands and the mission of the National Park Service, federal requirements and the circumstances of the site, and commitment to quality and energy efficiency.

**Office of Inspector General Reply.** During our review and at the exit conferences, we presented, to project managers from the Denver Service Center and Grand Canyon and Yosemite Parks, our estimate of \$29.2 million for the total cost of planning, designing, developing infrastructure for, and constructing the 23 single-family houses at Grand Canyon and the 34 apartments and 19 single-family houses at Yosemite and our estimates of \$390,000 and \$584,000 for the average costs of single-family homes at Grand Canyon and Yosemite, respectively. The project managers agreed with our estimates.

Regarding Grand Canyon, although the Park Service computed an average per home cost that is about \$52,000 less than our estimated cost of \$390,000, it did not provide support for the costs included in its calculation. Without this additional information, we did not change our \$390,000 estimate. In any event, the Park Service openly acknowledges that even its estimate of \$338,359 is "high for a relatively small single family home."

## Ongoing Housing Programs at Yosemite National Park

**Park Service Response.** The Park Service stated:

There is no mention of other ongoing housing programs at Yosemite [National Park] that also result in housing for employees, yet the report indicates that the park is doing little to address continuing employee housing needs beyond the completion of this last construction phase.

**Office of Inspector General Reply.** Our report accurately states that the Park Service has “basically completed currently funded housing construction at the Park [Yosemite National Park]” and that the Park’s housing needs cannot be fully met by the construction completed as of January 1996. In addition, the park Service’s response indicated that the Park Service had not yet requested funds for additional planned construction. However, to address the Park Service’s concern, we have modified our report (footnote 3) to reflect that the Park Service “plans to construct five single family homes at Rancheria Flats and multi-family housing for 108 employees.”

## Use of “High” Quality Construction Materials and Energy Efficient Products

**Park Service Response.** The Park Service stated:

Although some of these materials are not commonly used in traditional track, “private-owned,” single family houses, the National Park Service has experience that supports the use of heavy duty materials for the highly transient population that typically rents these units. The use of durable, maintenance-free products minimizes recurring maintenance costs (labor, materials, etc.). . . . Although the Park Service did not provide written documentation in the form of life cycle costs to support the use of these materials, there was documented discussion with park maintenance staff regarding historical use, and recurring maintenance on specific issues (e.g. exterior siding, flooring, doors, plumbing, windows, and electrical wiring). Their knowledge of labor costs and material life were used to make collective decisions on the use of these items.

... The use of energy efficient products is mandated through the Energy Conservation Standards for New Federal Residences (10 CFR 435). All new federal housing . . . must meet or exceed the energy performance standards established in this regulation. Life cycle cost information regarding the selection of heating and lighting systems were provided to the OIG [Office of Inspector General] during preparation of the audit.

**Office of Inspector General Reply.** The Park Service did not provide us with documentation of its meetings with park maintenance staff that demonstrated the costs or benefits of using “maintenance-free products.” Furthermore, we were not able to otherwise verify the long-term costs to benefits of the use of “durable, maintenance-free products,” because, as stated in the Park Service’s response, “The

Park Service did not provide written documentation in the form of life cycle costs to support the use of these materials.”

Regarding the use of energy efficient products, the Park Service stated that “[a]ll new federal housing . . . must meet or exceed the energy performance standards” established in the Code of Federal Regulations (10 CFR 435). However, we noted that the applicable regulation (10 CFR 435.300) provides flexibility in the selection of specific products and systems. Specifically, it requires only the establishment of “an energy consumption goal or goals to be met without specification of the method, materials, and processes to be employed in achieving that goal, but including statements of the requirements and evaluation methods to be used.” Further, the Park Service’s suggestion that it provided life cycle cost information that supported the selection of heating and lighting systems is misleading. The only documentation provided by the Park Service indicated that the Park Service did not follow the recommendation of its contracted architectural and engineering firm to install a heat pump system as the most efficient and economical based on a life cycle cost analysis. Instead, the Park Service installed a more expensive propane system.

**Park Service Response.** The Park Service stated:

Labeling construction materials as “enhancements” is incorrect and misleading. Most of the materials are either mandated by legislative action or are NPS [National Park Service] mission-related.

**Office of Inspector General Reply.** During our review, Park Service managers used the term “enhancements” when characterizing the materials and systems which they said “added quality to our houses.” Therefore, it was not a label chosen by our office. Furthermore, while we agree that Federal legislation or Park Service guidelines establish certain building requirements, it was the Park Service, for the most part, which decided how it was going to meet those requirements. To that extent, we believe that it is appropriate to describe as “enhancements” any high quality materials (as opposed to standard or upgraded materials) that were used to meet those requirements.

### **Future Housing Needs**

**Park Service Response.** The Park Service outlined the actions it had taken or was taking to meet its future housing needs in a more cost-effective manner. It also stated, “We would also like the reader to understand that with the cost limitation in place, the Service was unable to construct quality housing units . . . .”

**Office of Inspector General Reply.** Overall, we concluded that the Park Service’s lengthy response was an attempt to justify the high costs it incurred for housing construction at Grand Canyon and Yosemite National Parks as appropriate to the Federal Government rather than specifically describing the steps it would take to reduce or contain housing construction costs. Now that Federal guidance does not

specify a limit on housing construction costs, we believe that it is imperative that the Park Service focus its efforts on meeting its housing needs in a cost-effective manner.

Although the Park Service's response indicated that several efforts were under way to ensure that employee housing needs would be met in a cost-effective manner and stated that it had made improvements that "extinguish the former practice of custom designing all housing, custom development of all bid specifications, and the inefficiencies which can result by lack of a uniform housing needs assessment process," the Park Service did not indicate how it would control costs or detail which initiatives it would implement. For example, in discussing standardized designs, the Park Service stated:

. . . in 1994 we began to develop a catalog of Standardized Housing Designs. This catalog presents prototypical plans recommended for use in constructing new housing for the National Park Service. . . .

This selection of prototypical (standardized) housing plans can be flexibly adapted to unique programmatic, cultural, climatic and physical site constraints of park locations. They will accommodate pre-manufactured or site-built construction technologies.

However, the Park Service did not indicate when or where these designs would be used. We believe that the use of standardized designs is appropriate and should result in a reduction of planning and design costs, which, based on the \$5.8 million for planning and designing 76 housing units at Yosemite and Grand Canyon Parks, averaged \$76,300 per unit. Therefore, given the opportunities for reducing costs through the use of standardized plans, the economies of scale in constructing multi-family units, and the high costs of building single-family units on Park Service lands, we request that the Park Service reconsider its response to the recommendation focusing on specific actions that it intends to take to ensure the cost effectiveness of its housing program (see Appendix 5).



**STATUS OF HOUSING CONSTRUCTION AND COSTS  
AS OF JANUARY 1996**

	<u>Construction Contract Award Amounts*</u>	<u>Contract Amounts Expended</u>	<u>Denver Service Center Costs Expended* *</u>
Grand Canyon National Park:			
38 Home Sites	\$2,200,000	\$2,200,000	
23 Houses (70% Completed)	3,800,000	2,800,000	
36 Houses (5% Completed)	<u>8,000,000</u>	<u>300,000</u>	<u>                    </u>
Totals	14,000,000	5,300,000	\$3,900,000
Yosemite National Park:			
20 Apartments	3,800,000	3,800,000	
8 Apartments	1,800,000	1,800,000	
6 Apartments and 11 Houses	5,700,000	5,700,000	
8 Houses	<u>4,100,000</u>	<u>2,400,000</u>	<u>                    </u>
Totals	15,400,000	13,700,000	4,800,000
Grand Totals	<u>\$29,400,000</u>	<u>\$19,000,000</u>	<u>\$8,700,000</u>

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\*These costs include the contractual amounts paid to companies for construction, as well as the costs for infrastructure, such as preparing sites, building streets, and installing utility lines and sewer and water pipes.

\*\*Denver Service Center amounts include expenditures associated with special studies, surveys, preliminary design and construction documents, and construction and post-construction supervision. Since housing construction has not been completed, the amounts cited are not final costs and can be expected to increase.

## HOUSING ENHANCEMENTS PER NATIONAL PARK SERVICE

### FOR DURABILITY

- Cast iron sewer pipes
- Solid-core doors
- Commercial grade floor coverings
- High quality windows
- Durable gutters
- Heavy-duty plumbing fittings
- Additional electrical outlets and circuits
- Stucco finish

### FOR ENERGY EFFICIENCY

- Extra insulation
- Extra floor mass for solar storage
- Extra windows for ventilation
- Four alternate means of cooling
- Solar water heater
- Energy efficient appliances
- Commercial grade fluorescent fixtures
- Linear building form for solar gain

### FOR FIRE RESISTANCE

- In-house sprinklers\*
- Smoke detectors with automatic dialer"
- Concrete tile roofs

### FOR HANDICAP ACCESSIBILITY

- Extra large baths\*
- Extra large doors and corridors\*

### FOR ENHANCED ENVIRONMENT

- Have extensive outdoor living areas
- Avoid low-end housing "boxiness"
- Built within existing trees

### OTHER ENHANCEMENTS

- Hillside location
- Enhanced planting plan
- Noise control for apartments

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\*Enhancements identified in the Park Service's "Housing Design and Rehabilitation Guideline" (NPS 76) and/or the Americans With Disabilities Act.

**RELATIVE COSTS OF CONSTRUCTING AND  
AVERAGE SALES PRICES OF  
1,800 SQUARE-FOOT SINGLE-FAMILY HOMES**

	<u>Grand Canyon</u>	<u>Yosemite</u>
National Park Service	\$473,000 <sup>1/</sup>	\$626,000 <sup>1/</sup>
National Park Service	252,512 <sup>2/</sup>	352,617 <sup>3/</sup>
Excellent Quality	232,000 <sup>4/</sup>	250,000 <sup>4/</sup>
Excellent Quality (Adjusted)	247,500 <sup>5/</sup>	344,500 <sup>5/</sup>
Sales Price	175,000 <sup>6/</sup>	195,000 <sup>7/</sup>

National average cost, including infrastructure, to build an 1,800 square-foot home in the United States: \$125,000 <sup>8/</sup>

<sup>1/</sup> Total estimated costs for planning, design, developing infrastructure for, and constructing houses (including supervision).

<sup>2/</sup> Estimated housing construction costs only.

<sup>3/</sup> Estimated housing construction costs and costs of recreation facilities at El Portal, California.

<sup>4/</sup> Our estimate to construct an excellent quality home, which incorporates cost factors for high quality materials and workmanship, near the parks. Costs include planning, design, infrastructure, supervision, and profit.

<sup>5/</sup> Costs of excellent quality increased to include specialized Federal expenses.

<sup>6/</sup> Based on information provided by realtors on the average price of an 1,800 square-foot home selling in Flagstaff, Arizona (79 miles from Grand Canyon).

<sup>7/</sup> Realtors' estimates of sales prices for 1,750 to 1,850 square-foot homes in Merced, California (68 miles from Yosemite), were \$85,000 to \$195,000.

<sup>8/</sup> Estimate computed based on information provided by the National Association of Home Builders.



## United States Department of the Interior

NATIONAL PARK SERVICE  
P.O. Box 37127  
Washington, D.C. 20013-7127

IN REPLY REFER TO:

D3415(2613)

October 18, 1996

Memorandum

To: Acting Assistant Inspector General for Audits

Through: Management Officer *Frank Song*

From: Acting Deputy Director *[Signature]*

Subject: Comments on Draft Special Report on the Cost of Construction of Employee Housing at Grand Canyon and Yosemite National Parks, National Park Service (Assignment No. W-IN-NPS-001-96)

The September 18, 1996 memorandum transmitting the draft report states that this review of costs associated with constructing employee housing at Grand Canyon and Yosemite National Parks was requested by a member of Congress who asked OIG to evaluate the "excessive costs" of employee housing in the two parks and the construction of employee-only recreation on public lands.

The OIG draft special report recommends that the Director, National Park Service, review the strategy that the parks, particularly Grand Canyon and Yosemite National Parks, have for meeting their employee housing needs to ensure that housing is designed and constructed in a cost-effective manner.

We agree with the recommendation and, by the following comments, evidence the implementation of it.

Our review has produced the clarification that both Grand Canyon and Yosemite National Parks have established (Attachments 1 and 2) their employee housing needs at a level consonant with the operational needs of each respective park. Our review considered the analysis (Attachment 3) of construction planning, design and supervision provided by the Denver Semite Center and, additionally, recognizes what the Service's Housing Program Manager has done over the last several years to make further and continuing improvements to the Housing Program. (Attachment 4).

### Yosemite National Park

The comments from Yosemite National Park, Attachment 1, clearly recite the variety of housing programs (e.g. apartment construction, trailer replacement, house construction) necessary to the accomplishment of the Park's mission, in accordance with Guideline NPS-36 and the statutory provisions codified at 5 U.S.C. 5911. The general comments and background information contained on pages 1 through 3 of Attachment 1 provide assurance that Yosemite National Park has progressively addressed the housing needs backlog while maintaining controls so that approximately 50% of the Park's permanent employees still live in private housing outside the Park boundary. This, we believe, demonstrates significant managerial restraint and, to the Park's credit, an admirable degree of creativity to keep so few permanent employees on Park lands in government housing at such a remote environmental location.

It is important to note that, like other ordinary people, the Park's employees expect standard, comfortable homes with normal amenities and facilities such as are used in day-to-day living. We find this expectation on the part of

our employees to be entirely reasonable and necessarily compatible with the Service's mission. We see no inference contained within the OIG draft special report suggesting that we deny our employees such reasonable facilities and force them to live in substandard housing. Rather, the OIG draft special report recites the various reports which described "... the housing shortages and unsafe and substandard employee housing...in the Valley and in the nearby communities." (underlining added for emphasis.)

Because of the Park's remote location on the Sierra Nevada mountain range, and the Park's widely dispersed work locations, the Park has assiduously monitored its housing needs over the years. Attachment 1 documents on pages 3 through 4 the Park's housing construction history from 1966 to the present. This history shows that the Park has taken 30 years to bring it to the present status of accomplishing its mission with only half its permanent staff being required to live in the Park. We must also note that the full, operational staff size of the Park, including additional seasonal employees during the peak visitor season, is 770 employees. In light of this, we feel that the Park ought to be commended for restricting its housing needs as it has done.

The OIG draft special report fails to accurately and fully identify all the extraordinary costs which the Park identified (Attachment 1, pages 4 through 7). These costs total \$4,489,662 (Attachment 1, page 6) and are costs which a private home construction company would not expend because these costs are extraordinary to the Federal government and to the National Park Service under current law. Such expenses would economically prohibit a private home construction company from competing with other construction companies building exclusively on non-government land. The important distinction drawn here is that these extraordinary expenses attach to construction on NPS lands, because of the laws which Congress has enacted. The principal misrepresentation in the OIG draft special report is the inference that no such cost differential should exist for housing constructed on NPS lands. Nor did the OIG auditors take the competing contractors' bids which were rejected in favor of those which the Denver Service Center awarded as fair competitive examples of equivalent cost comparisons for the construction of housing at these parks. We take the position that open competition by housing construction firms, bidding on a uniform set of specifications which apply to the Park, is the only proper theater of cost comparison because the natural incentives of such competition serve as independent controls that establish the reasonable range of costs for the construction specifications identified. Rather, the OIG draft special report only offers non-comparable comparisons to the housing construction on non-NPS (private) lands and to some Federal housing (by other agencies on non-NPS lands) which the OIG report admits "...these examples do not directly compare..." The OIG draft special report gives no explanation as to why it failed to compare competitive bids we received and have in file to establish the reasonable level of cost we have experienced under current Federal laws. This seems elemental to us. Clarifications provided by the Park (Attachment 1, pages 7 through 9 and Appendices) address additional misleading statements in the OIG draft special report.

The Park is currently working on a parkwide housing needs assessment as a result of the Service's improvements to the housing program over the last 2 years. The assessment will be completed during the Spring of 1997. The Park is reviewing its Housing Management Plan for further refinement that will ensure the most effective management of its inventory of employee housing. These steps further illustrate that Park management continues to ensure that employee housing is efficiently and economically managed. Within the next few months, the Park will release a draft Housing Environmental Impact Statement that will help to chart the course for any further develop of necessary housing. The responsible official is the Yosemite National Park Superintendent.

#### Grand Canyon National Park

The comments from Grand Canyon National Park, Attachment 2, recite some of the variety of alternatives its housing program contains (e.g. multi-family housing, relocation of some jobs outside the Park, construction of housing outside the park) above and beyond single-family housing within the Park necessary to the accomplishment of the Park's mission, in accordance with Guideline NPS-36 and the statutory provisions codified at 5 U.S.C. 5911.

The Park's comments contain cost data obtained from the Denver Service Center which shows that the total cost for the 23 homes was \$7,782,262, which averages \$338,359 per unit. The Park then discusses (Attachment 2,

pages 2 through 4) the general factors which our comments elsewhere treat in greater detail (Attachment 1). The Park corroborates the assertions of Yosemite National Park which have been emphasized in the above section, and further notes that "...comparison of Grand Canyon's homes to home sales in Flagstaff and Williams is comparing apples to oranges..." This clearly echoes the observation in the foregoing section concerning the lack of comparability between housing built on non-NPS lands versus housing built on Park lands. Repeating the above comment in the preceding section, we take the position that open competition by housing construction firms, bidding on a uniform set of specifications which apply to the Park, is the only proper theater of cost comparison because the natural incentives of such competition serve as independent controls that establish the reasonable range of costs for the construction specifications identified.

The comments from the Denver Service Center (Attachment 3) provides further corroborating details concerning the costs of housing construction at both Parks, and also references the major steps taken to streamline the planning and design process, discussed more fully in Attachment 4 prepared by the NPS Housing Program Manager.

### Conclusions

While the OIG draft special report is inaccurate, it does virtually assert that further improvements to the NPS Housing Program can, and should, be made. We agreed with the express conclusion similarly reached by the General Accounting Office in two of its reviews (GAO/RCED-93-192 and GAO/RCED-94-284), and have made significant strides (Attachment 4) over the past several years to implement the recommendations which GAO provided us. The Catalog of Standard Housing Designs, the standard bid specifications, the Housing Needs Assessment mechanism, clearly illustrate that the landscape from which our historical costs arose, as recited on revised Table 5 in Attachment 1 and in Attachment 3, has clearly passed into history. These solid management improvements to our Housing Program extinguish the former practice of custom designing all housing, custom development of all bid specifications, and the inefficiencies which can result by lack of a uniform housing needs assessment process.

Supported by the positive feedback received from GAO staff on our progressive improvements to the Housing Program as a result of GAO recommendations, we conclude that our approach, as discussed in these comments, also implements the recommendation of this OIG special draft report.

We appreciate the opportunity to comment.

Attachments

[BLANK PAGES 15, 17, 19, 21, AND 23 WERE NOT INCLUDED BY THE OFFICE OF INSPECTOR GENERAL IN ATTACHMENT 1.]



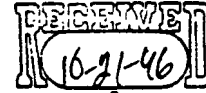
# United States Department of the Interior

NATIONAL PARK SERVICE  
P.O. Box 577  
Yosemite National Park, California 95389

IN REPLY REFER TO:

A54(YOSE-A)

October 11, 1996



Memorandum

To: Director, National Park Service

From: Superintendent, Yosemite National Park

*HG 10/18/96*

Subject: Review comments, Draft Special Report, Cost of Construction of Employee Housing at Grand Canyon and Yosemite National Parks, National Park Service, submitted by the Office of the Inspector General (OIG)

The following comments have been prepared in response to the Draft Special Report, Cost of Construction of Employee Housing at Grand Canyon and Yosemite National Parks, National Park Service, (Assignment Number W-IN-NPS-001-96), submitted by the Office of the Inspector General (OIG). These comments address only the Yosemite-related elements of this report.

GENERAL COMMENTS:

This particular housing construction program at Yosemite has been ongoing for the past eight years. Many of the complications encountered during this construction and related decisions were not addressed in the report. It is imperative that all aspects of these projects be considered before judgments are made concerning planning and construction costs and the resulting end product.

There is no mention of other ongoing housing programs at Yosemite that also result in housing for employees, yet the report indicates that the park is doing little to address continuing employee housing needs beyond the completion of this last construction phase. The Phase I apartment construction and the Trailer Replacement Program for example, which have realized new homes in place of old amortized trailers was not mentioned as part of the overall plan to improve housing in Yosemite.

BACKGROUND:

Title 5, U.S.C. 5911 states: "The head of an agency may provide, directly or by contract, an employee stationed in the United States with quarters and facilities, when conditions

of employment or of availability of quarters warrant the action.”

National Park Service Guideline No. 36 states: “New or additional housing shall not be provided unless it is determined that the housing is essential to the accomplishment of a bureau’s mission and are energy efficient. ...housing is limited to circumstances wherein necessary services cannot be rendered or property protected otherwise. ....the remoteness of location may necessitate provision of Government Furnished Housing for all employees other than local hires.”

Yosemite National Park is situated in a remote location on the slopes of the Sierra Nevada mountain range. The roads leading to Yosemite from outlying communities are narrow and winding with steep grades and sharp curves. Deep snow and icy driving conditions are routine during winter months and slow moving traffic with many recreational vehicles, busses and cars are the norm. It can take 30-45 minutes or more to drive the 13 miles between El Portal and Yosemite Valley and it takes about two hours to drive between Wawona and Tuolumne Meadows Districts of the park. The park’s work locations are widely dispersed and many employees must routinely travel between districts while at work.

Managers of Yosemite have consistently maintained that in order to protect and manage the park’s resources and the park’s visitors, it is necessary to provide some housing on-site. Further, it is vital that certain staff members live at strategic locations throughout the park to provide law enforcement, emergency response, fire protection, and water and wastewater systems monitoring, etc.

It should be noted that approximately 50 per cent of the park’s permanent employees live in private housing outside the park boundary, however, the rental markets are small and houses for purchase are not plentiful. Rental and purchase rates are often too high for the lower salaried employees after the addition of commute costs.

Management has concluded that government housing **needs** to be provided for seasonal and other lower graded employees, required occupant employees, and other employees necessary for efficient park operations.

Management has made a concerted effort to make government housing communities as “normal” as possible by having a variety of housing options available for the park staff, i.e. a few 4-bedroom houses, 3-bedroom houses, 2-bedroom houses, 1 and 2 bedroom apartments, and duplexes. There still exist some tents and cabins in the high country as well as some modulars and trailers in two districts of the park.

The park staff is comprised of up to 420 permanent employees and as many as 250 seasonals during the peak visitor seasons. The permanent employees are career employees that may spend their entire careers with the National Park Service and many of the seasonal employees ultimately become permanent employees, The majority of these employees are in contact with the public that visit and care about the national parks. It is imperative that these employees can experience a normalcy of personal life so they can



perform their professional responsibilities well. Like other ordinary people, Yosemite employees, living in government housing, expect standard, comfortable homes, regular amenities and facilities used in day-to-day living.

**GENERAL INFORMATION CONCERNING THE EL PORTAL ADMINISTRATIVE SITE WHERE THE HOUSING CONSTRUCTION HAS OCCURRED THAT IS IN QUESTION IN THE REPORT:**

The OIG Report compares construction costs in the private sector with the costs of constructing housing on the El Portal Administrative Site at Yosemite National Park. It must be noted that Yosemite is constrained to build in only limited locations. Yosemite does not have legislative authority to construct outside government lands. Federal legislative requirements mandate that certain planning and scoping processes occur before construction can begin. Yosemite's General Management Plan requires that non-required housing as well as other functions not needing to be in Yosemite Valley be moved to other locations. The El Portal Administrative Site was purchased in 1958 for this purpose.

The Rancheria area of El Portal, where construction has occurred, is comprised of 60 acres, varies in grade from 16-33 percent, is extremely rocky and has potential for mud flows and slides. For these reasons, the area required extensive planning and design.

In 1991, the Draft Yosemite Valley Housing Plan proposed using the Forests area for housing and administrative functions; Wawona was also evaluated. However, because of great public concern over development in those areas, both alternatives were rejected. El Portal remains the only viable option for housing and administrative functions. Thus, site development requires extraordinary site selection and preparation to effectively utilize a limited land base with steep, rocky conditions.

The first NPS housing constructed in the Rancheria area was in the early 1960's, (part of the Mission '66 program) twenty-six 3-bedroom, single family homes were built at that time.

In 1988, Phase I of the current housing construction program began with the construction of 24 apartments. Phase II included construction of 34 apartments. These apartments were built to replace Yosemite Valley tent cabins that were destroyed by flooding and wind fall. In keeping with the GMP, this replacement housing was built in El Portal.

Phase III included plans for construction of 26 single family homes. Nineteen have been built to date.

El Portal has 750 residents; a post office, **one** gas station and a **very small** grocery store (convenience store type - bread, milk, fruits and vegetables). The nearest community with a population base large enough to support all amenities is approximately 1-1/2 hours away. No commercial laundry or storage facilities, theater, or other commercial amenities exist at El Portal. Mariposa County provides an elementary school in the El Portal community. The school facility includes a ballfield, but it is off limits during school

hours. The County Parks and Recreation Program has provided a swimming pool and tennis court in the area.

**DEFINING THE ROUTINE GOVERNMENT CONTRACTING COSTS AND THE EXTRAORDINARY CONSTRUCTION COSTS ON THE EL PORTAL SITE WHICH ARE ABOVE AND BEYOND THE COSTS PRESENTED BY THE OIG FOR TYPICAL PRIVATE SECTOR CONSTRUCTION:**

The OIG Report states its estimate for constructing an 1,800 square-foot single family house in the private sector, including design, planning, infrastructure, supervision and profit would range from \$102,000 to \$250,000 near Yosemite National Park. These private sector estimates apparently do not include site preparation.

We do not agree that most private developers incur all costs associated with infrastructure. It is true that a developer will construct secondary delivery systems and their tie-into the primary system. These costs will be passed on to a home buyer. However, primary distribution systems for water and sewer are typically community costs, which are passed on to the home owner through taxes and utility bills, not by the private developer. The El Portal project includes elements that would be considered in both categories, primary and secondary distribution systems.

In keeping with this comparison, the following costs should not be included in the “normal per-unit” costs of constructing houses at the El Portal site (Yosemite).

**Unusual Site Conditions -\$1,358,500:**

The El Portal (Yosemite) site is extremely rocky with many rocks and boulders up to two cubic yards in size - during construction, many required blasting and rock splitting efforts. Many boulders had to be hauled out and fill hauled in adding to the expense. Due to the slope of the mountain, many retaining walls had to be constructed, some as high as eight feet.

The services of a geophysicist were required to determine the stability of the hillside and it was determined that mudslides/flows were possible. As a result, three large berms above the housing area had to be constructed. Gullies and creeks required culverts and in one instance, a fairly large bridge had to be added.

El Portal is extremely hot during the four months of summer with temperatures consistently over 100 degrees. Both the planning and construction phases of this project worked to retain native trees where possible to preserve shade.

Six different basic floor plans were designed to accommodate the slope (down-slope, up-slope, across-slope), siting and different numbers of bedrooms. Then configurations were modified to fit specific terrain.

**Cultural and Natural Resource Compliance and Monitoring - \$327,370:**

The National Environmental Policy Act and Section 106 of the National Historic Preservation Act apply upon federal lands but not on private lands. Environmental

assessments and archeological compliance and surveys are required. We do not work under California statutes, which might place some requirements on **private** developers, but we are not aware of that being the case.

Prehistoric and historic Native American occupation and continuing Native American interest has complicated the planning and decision making process in El Portal. There are a number of burials, archeological sites and gathering areas (for certain plant materials used for basketry, etc.), that must be dealt with in a sensitive manner. There are certain sites that the Native Americans request we avoid/protect thus complicating the planning and construction process. Both Native American and archeological monitors are on site at all times during construction.

The Valley elderberry bush, habitat of the threatened invertebrate, the Valley elderberry beetle, was found in several places in the project area and had to be avoided during planning and construction. Also, Congdon's wooley sunflower, State listed rare species; Tompkin's Sedge, State listed rare species and Congdon's monkey flower, sensitive species - limited occurrence in the park, only known occurrence in Rancheria, had to be avoided during planning and construction.

Americans With Disabilities Act Requirements -\$49,248:

The National Park Service is mandated to provide a portion of housing for disabled employees. The subject houses were built to meet the minimum requirements of the Uniform Federal Accessibility Standards and with the Americans with Disabilities Act.

Lamer Capacity Water Tank and Fire Suppression Systems -\$504,393:

The water tank, to provide culinary water as well as fire protection to the El Portal Community, was increased in size by one-third as a part of this construction.

Houses were built to include inhouse sprinkler systems and autodialer smoke detectors and fire retardant materials. Requirements for fire protection and suppression for employee housing were met.

A major wildland fire burned 16,000 acres in 1990. This fire came very close (within a few hundred feet) to some of the Mission 66 houses in El Portal. Residents were evacuated on three occasions during the fire. Phase II planning was occurring at that time and fire specialists became involved in the planning process along with the regular planning specialists. Many changes and improvements made in Phase II were illustrated as necessary as a result of the 1990 fires. Incidentally, 13 homes in Foresta not far from El Portal were lost in the fire. Due to El Portal's remoteness and size, structural fire suppression is accomplished by a volunteer fire department.

Propane Distribution System -\$62,985:

An entirely new propane distribution system with "tank farm" was designed and installed. Private sector construction does not routinely include these costs as part of the house construction cost. They would have expected each occupant to contact an LPG vendor and make arrangements for the purchase or lease of a propane tank.

Remote Location -\$337,554:

El Portal is considered a remote and isolated location. Labor and supplies come from long distances. The nearest metropolitan city is Merced (population 73,000, 68 miles distance), thus construction costs are increased proportionately for these reasons.

Davis-Bacon Wage Rates -\$1,226,621:

In this geographic area, labor costs for certain disciplines required by Davis Bacon Wage Rates are twice the prevailing wage rates, again driving up construction costs.

Recreational Facilities and Open Space -\$622,991:

The NPS thought it was important for the well-being of the employees and other residents of El Portal to improve the existing ballfield and to add a basketball court- a small play field and a tot lot. These were constructed in Phase III in addition to improving the existing ballfield to meet little league and adult softball specifications. Without these recreational facilities included in this housing construction program, the available housing in the Rancheria area was to quadruple without adding any additional amenities for this isolated population of employees and partners.

Total Extraordinary Costs -\$4,489,662:

Total of extraordinary and government contracting costs currently included in the El Portal per house figures presented in the OIG report - \$4,489,662. We believe these amounts should not be included in the comparison of costs for constructing housing at El Portal with the costs of routine private sector housing construction.

PLANNING AND DESIGN CHANGES AFTER COMPLETION OF PHASE 1:

The OIG report does not recognize or include information on Phase I construction of 24 apartments which were completed eight years ago. It is important that the Audit report reflect information concerning the Phase I construction program since many decisions for Phases II and III were made because of the lessons learned in Phase I.

Cedar siding was used in Phase I and now needs major maintenance due to the extreme heat in the area and its effects on the siding. It has been eight years since these units were constructed and we are presently re-staining the exteriors at a cost of \$18,000 per building. In six to eight years, the siding will need major maintenance again and thereafter. By comparison, the stucco-sided Mission 66 houses did not need to be refinished for 25 years. For this reason, it was decided stucco siding, which withstands the heat better and is easier to maintain would be used in the next phases. Stucco also provides better fire protection than many other options. Fireproof materials were also used under the eaves and decks of later phases. It should be noted that in the Central Valley, within 100 miles of El Portal, it is not uncommon for stucco siding to be used in housing tracts.

It was learned from experience that composition shingle roofing does not holdup as long as predicted due to the high temperature fluctuations in the El Portal location. Replacement is required every 10-15 years at a cost of \$11,000 per roof. Concrete shake roofs were used in Phases II and III and will save \$33,000+ per house over a period

of 50 years. These shakes also afford better fire protection.

Covered parking was not constructed in Phase I and again with the extreme heat of El Portal, this was considered a serious problem by the occupants. In Phases II and III, covered parking was constructed.

Storage space was minimal/inadequate in the Phase I apartments. In Phase II, additional storage space was built and in Phase III, 2-car garages were constructed. Employees generally travel about two hours to be able to do grocery shopping as well as other shopping and generally stock up for a month or more so it is critical to have adequate storage.

Construction in Phases II and III included handicap ramps, wider bathroom doors, and all living areas on one floor where possible. Units that were not fully accessible were made handicapped "friendly" whenever possible.

Phase I apartments had serious noise problems, water in the lines could be heard as well as conversations from one apartment to another. Phase II included extra sound proofing including a layer of 1-1/2 inch concrete between floors with a rubber underpayment between flooring materials along with rubber spacers for noise isolation of supply and waste plumbing pipes.

The electric heating systems (heat pumps) in Phase I apartments were inefficient and costly to operate. In Phases II and III propane heating systems were installed.

Phase I landscaping included small and slow maturing trees, which provide little shade. Wildflowers which were planted, have since turned to weeds, increasing the fire hazard. In Phases II and III, early maturing trees, lawns and natural landscapes were added for shade, fire protection and for easy and cost effective maintenance.

In conclusion, we feel it is essential to consider the lessons learned on the initial phase of housing construction. Decisions made in the later phase were as a result of this experience.

The sizes of the apartments in Phase II and single family homes in Phase III are not large or spacious. The apartments are 1,039 square feet for 2-bedroom; 800 square feet for a 1-bedroom. Most of the newly constructed homes are 3-bedroom with an average size of 1,200 square feet. The living room is 16x13 (211 square feet) and the master bedroom is 10x13 (134 square feet).

SPECIFIC COMMENTS DIRECTED AT SPECIFIC TEXT:

The OIG Report states: "During 1995, about 100 permanent employees were transferred from the Valley to the Park's administrative site in El Portal, California."

This statement needs clarification - only these employees' offices were moved. This move did not result in any employees changing residences. In fact, only two of the 100

employees lived in Yosemite Valley. The others lived in El Portal or surrounding communities.

The OIG report states: “We found that the decision to construct 19 single-family homes and 34 apartment units did not fully address the substandard and overcrowded housing conditions that existed in the Park”.

As documented in the Yosemite Valley Housing Plan, Draft Supplement to the Final Impact Statement for the 1980 General Management Plan and the Addendum to the Yosemite Valley Housing Plan Draft Supplement to the Final Impact Statement for the 1980 General Management Plan, the substandard and overcrowded housing conditions in the park cannot be addressed by adding only 19 single family homes and 34 apartment units. The five phases of construction only completed the Rancheria area housing construction program. Future construction, as outlined in the planning documents, would continue our efforts to improve the housing conditions.

The OIG report states: “Annual budget requests for the Park Service from 1991 through 1993 indicated that, in addition to the single-family homes and apartments that were being built, two 40-room dormitories would be constructed in El Portal to provide housing primarily for seasonal employees, most of whom were living in substandard housing in Yosemite Valley. However the two 40-room dormitories were not built because, according to Park Service officials, the Park Service decided to house seasonal employees in studio apartments rather than dormitories. As of January 1996, the Park Service had not requested funding to construct these studio apartments.”

This statement is misleading. Budget requests through FY93 included the request to build dormitories based on the employee numbers and housing types considered appropriate during the mid-1980’s. During 1991, a formal housing needs study was initiated which assessed current and projected employee numbers and needs.

Since 1993, the park has converted 84 seasonal/temporary positions to permanent status due to an OPM ruling on service-wide personnel practices. In addition, due to increased visitor use and expanded shoulder seasons, the park is utilizing longer “term” (up to 4 years) and “temporary” (up to one year) positions rather than the short 3 to 4 month seasonal college student of 5 to 10 years ago. The term/temporary staff is comprised of older, career employees with more personal belongings, working longer seasons and expecting to live in private, non-shared housing.

The OIG Report states: “In addition, all 34 apartments that were built were rented by permanent, not seasonal, employees because, according to Park Service officials, of the “quality” and “built-in” features of the units and because housing managers generally preferred the stable incomes associated with renting to permanent employees. Park Service officials also said that the rent for the new apartments was too expensive for seasonal employees. As a result, after construction of the housing units in El Portal, we estimated, based on Park Service records, that at least 70 seasonal employees would still live under the same conditions that prompted the funding for the new employee housing.”

The apartments were constructed to replace seasonal Camp 6 tent housing that was earlier eliminated due to unsafe conditions, including a fatality, from hazardous trees in the area. In the interim, seasonal employees moved into permanent employee housing as it became available. Upon completion of the apartments, seasonals remained in the previously permanent employee housing and the new apartments were made available to permanent employees. As houses in Rancheria are being completed, permanent employees are moving from apartments, with seasonals moving in behind them.

At no time have managers restricted seasonal employees from housing based on stability of income. Seasonal employees are valued and respected members of the Park Service family, with housing needs that are critical. Management of the park practices the philosophy that it is important to the mission of the park as well as the well being of the seasonal employees to house them inside the park in government housing. This is currently being done. Living conditions of seasonal employees continues to improve as new housing is built and existing housing is rehabilitated/improved. As permanent employees move into the new, single-family housing, seasonals are moving into the apartments. Fifteen seasonal employee trailer units have been removed during the past few years due to deterioration.

In addition, rental rates for all employees are collected through payroll deduction and permanent and seasonal employees are on the same salary structure with the same capability to pay rent.

#### SUMMARY:

Direct comparisons of federal and private home construction are difficult because of the costs specific to federal projects and the nature of the El Portal project: items such as compliance and public processes, community planning and infrastructure, Davis-Bacon wage rates, remoteness, unusual site conditions, and other elements of the project in question add to the Government's construction costs.

Increased operational funding is increasingly difficult to obtain therefore consideration and importance must be placed on building for durability, longevity and efficiency.

Yes, the NPS made deliberate decisions to emphasize durability, energy efficiency, fire resistance and handicap accessibility. We emphasized durability to reduce annual maintenance costs which could be a drain on base funding levels, which in turn have not kept pace with our increasing expenses of the past two decades. We emphasized energy efficiency because such considerations are required of the NPS. We emphasized fire resistance because of the specific site conditions and local fire history and incidence. We emphasized handicap accessibility because it is required by law. But, we believe we were justified in our planning, design and construction of these housing units.

We believe the apartments, homes and recreational facilities in question to be of reasonable design, size and quality, and are comparable with average housing in nearby communities.

**OIG REPORT RECOMMENDATION:**

The NPS has several efforts underway to assure that employee housing needs are met and to assure that housing is designed and constructed in a cost-effective manner.

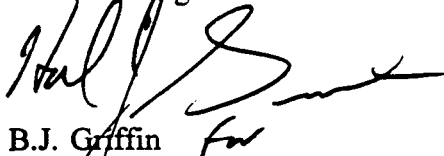
Yosemite is currently working on a parkwide housing needs assessment that will identify the park's requirements for staff occupancy on-site to protect the park's resources as well as to protect and assist park visitors. At the same time, employees' personal housing needs are being considered to assure, with the lengthy commute from neighboring communities to the park, that adequate human resources are available. This process will be completed during the Spring of 1997.

There are continuing efforts being made to obtain the legislative authority to be able to construct government housing on private neighboring lands; to allow employees to purchase government-owned houses on government land; and other innovative ideas and concepts to improve the government-provided housing program.

There is a continuing effort to upgrade and improve existing government housing at Yosemite. Current efforts involve rehabilitation projects on 97 housing units that include replacing roofing, decks, refinishing exterior walls, installing thermal windows and energy efficient heating systems, adding insulation, upgrading plumbing and electrical systems, and adding required fire sprinkler systems.

The current Housing Management Plan for the park is also being re-done to identify the specific housing needs for each district of the park and generally identify how the park will most effectively manage the stock of housing for employees.

The park will be releasing within the next few months a draft Housing EIS that will help to chart the course for further housing development within Yosemite. The NPS is standardizing several housing construction plans for the Service to eliminate some of the costs of design.

  
B.J. Griffin *fw*

Enclosures:  
Appendix



## APPENDIX A

Yosemite takes exception to the report in the comparisons to Merced and Mariposa housing, costs for “unusual site conditions”, open space and recreation facilities and enhancements.

### Merced and Mariposa Housing Comparisons:

Within the El Portal housing area, efforts were made to maximize the number of units within the area by fitting houses to the land with stepped foundations and zero lot line design and elimination of individual propane tanks with centralized propane distribution. All techniques maximized utilization of the topography and buildable areas.

By contrast, developable rural land in Mariposa County is zoned for 2.5 and 5 acre parcels, with construction limited to one primary house and one guest or rental house on the parcel. Within those parcels, flat terrain is usually available for development with flexibility for easy access and propane service. If flat terrain is not available and services are not proximate, development typically does not occur.

Increased required fire flow water demand from the additional houses and the newly constructed warehouse and office complex located one mile from the new houses, in El Portal, necessitated improvements to the existing water system. The El Portal housing concentration placed added responsibility on the NPS to provide fire protection capabilities to prevent catastrophic losses such as occurred in the nearby Foresta area, which experienced the loss of 13 private and NPS houses in a 1991 Wildfire.

Merced and Mariposa in-town sites have municipal utility systems that can provide fire flow and utility service for extension costs only. No system upgrades are required.

Rural Mariposa sites do not have fire flow mandates and the dispersion of structures on 2.5 to 5 acre sites reduce the catastrophic fire risk of dense housing.

Housing cost comparisons to Merced are irrelevant to the El Portal situation. Unlike El Portal, which is in the Sierra Mountain range, Merced is in the San Joaquin Valley, with extremely flat terrain and easily excavated soils. House construction is far less complicated than on the El Portal site and logistics, including mobilization and materials deliveries are simpler. Finally, the comparison is irrelevant because the commute to Yosemite is impractical, with a one-way travel time to Yosemite Valley of approximately 2 hours.

Mariposa comparisons are more relevant in that the one-way commute time to Yosemite Valley is approximately 1 hour. However, Mariposa sites typically do not have the granite subsurface character, steep slopes and tight sites of El Portal.

Unusual Site Condition Costs:

Typical houses in Mariposa, Merced and probably the referenced construction by Bureau of Indian Affairs, U.S. Department of the Interior, the U.S. Department of Housing and Urban Development and the U.S. Army Corps of Engineers are slab on grade.

By contrast, El Portal sites, in order to utilize steep sites and maximize housing density, needed stepped foundations. A past NPS effort to use a slab on grade foundation in El Portal resulted in extensive site leveling, construction of a \$56,000 retaining wall and subsequent drainage problems and inefficient land usage. Repeating slab on grade construction would have greatly reduced the number of housing sites within the administrative site.

The net difference between the typical slab on grade foundation and El Portal stepped foundations was approximately \$69,000 per house, not including the extraordinary site leveling costs. Considering past El Portal slab on grade experience, the net cost difference is negligible, but the loss of housing density is significant.

The steep slopes and evidence of past landslides in El Portal necessitated construction of berms to protect the existing and new housing sites from potential mudflow damage. Cost of the berms was averaged at \$2,500 per new house, even though the berms protect the entire housing area.

By comparison, Mariposa and Merced developers do not build in areas subject to landslides. In this case, the entire El Portal residential site was determined by geotechnical engineers to be at risk, with no option but to construct berms.

Site Utilities:

Mariposa and Merced builders will typically pay for extension of utilities, but not for major upgrades to the basic system. In-town fire protection is adequate without development of improvements to the municipal system. Rural Mariposa houses will typically have no fire flow protection provided by the builder.

By contrast, the El Portal municipal system was incapable of providing the additional demand without significant improvements. Based on past fire losses in the area, the improvements were considered prudent and necessary, to a cost of \$26,262 per new house, but actually also providing protection for existing houses and NPS maintenance facilities.

Open Space and Recreation Facilities:

Mariposa builders do not contribute any costs to open space or recreation facility development. The Mariposa Recreation District manages recreation lands and no burden is placed on builders to expand or manage recreation lands or set aside any property for open space.

By contrast, the El Portal community had no safe facilities for recreation except for tennis courts. The closest sanctioned ballfields and soccer fields were 40 miles away. Providing facilities is within NPS and standard community planning policy.

The recreation facilities resulted in an increase of \$32,789 per new house, although the benefits will serve all residents and the public.

Enhancements:

As acknowledged in the Draft Report, the General Accounting Office “recommended that Park Service officials...develop a plan to close the differences between rental income and maintenance costs.” The NPS recognized that as owners in perpetuity, it is cost effective to provide durable, safe and energy efficient housing, with low maintenance requirements. In contrast, builders typically build for low initial capital costs, not life-cycle costs.

For example, past NPS experience in El Portal with asphalt shingles, the standard for Mariposa, has shown that 20 year shingles only last 10-15 years in the heat and temperature changes typical in El Portal. For approximately twice the cost of asphalt shingles, the concrete tile roofs will last 4-5 times longer and provide improved fire resistance.

The roofing material cost difference is approximately \$6,000 per house according to R.S. Means Building Construction Cost Data and the El Portal contractor’s Schedule of Values. The replacement cost of asphalt shingles after 10-15 years is approximately \$11,000, including materials and labor.

Similarly, wood siding lasts less than 10 years. At approximately twice the cost, the stucco finish is projected to have triple the life of wood, with improved fire resistance.

The stucco cost difference is approximately \$8,000 per house according to R.S. Means Building Construction Cost Data and the El Portal contractor’s Schedule of Values. The replacement cost of wood siding after 10 years is approximately \$7,000, including materials and labor.

Finally, landscaping, which is not included in basic Mariposa and Merced home costs, is critical for fire protection and erosion control. Recent wildfires in Mariposa reinforced the importance of fire resistive landscaping. Houses with native grasses and no fire breaks burned, while adjacent landscaped properties survived. Considerable effort and detail was made in the El Portal landscape planning to build on past fire experience in the area. Also, being a steeply sloped area, erosion control and runoff management was critical in the landscaping.

Landscaping costs were approximately \$10,000 per house.

Conclusion:

Conditions between El Portal and Mariposa and Merced differ significantly in site conditions, land-use requirements, infrastructure responsibilities, recreation costs, remoteness, Archeological constraints, making comparison of costs for housing extremely difficult and generally unanchored in similarity.

Modifying Table 5 in the Draft Special Report (Assignment No. W-IN-NPS-001-96) to

identify additional costs associated with El Portal housing over private Mariposa housing, results in an adjusted cost of \$236,298, not including landscaping and durability and energy efficiency improvements. [See DSC response for “Adjusted” details]

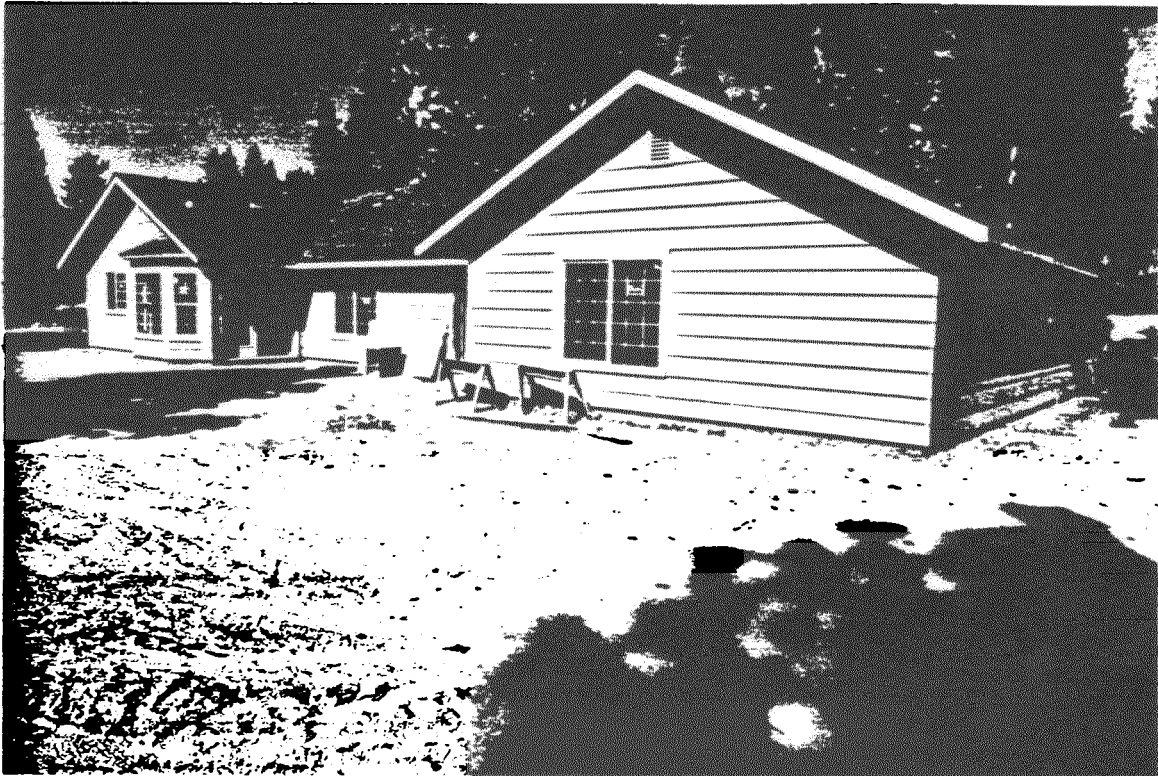
<b>Description</b>	<b>Original</b>	<b>Adjusted</b>
Davis Bacon Wages	\$64,559	\$64,559
Buy American Act	\$0	\$0
Archeological Studies	\$0	\$17,230
Threatened and Endangered Species Act	\$0	\$0
Remote Location	\$17,766	\$17,766
Unusual Site Conditions	\$5,976	\$71,500
SBA Minority Program	\$0	\$0
ADA	\$2,592	\$2,592
Fire Suppression	\$3,600	\$3,600
Site Utilities	\$0	\$26,262
Open Space & Rec. Facilities	\$0	\$32,789
<b>Totals</b>	<b>\$94,493</b>	<b>\$236,298</b>

Including the adjusted specialized Federal Costs to the report’s “estimated ...private sector construction costs, including design, planning, infrastructure, supervision, and profit” the range would be from \$338,298 to \$486,298.

The report identified Yosemite cost range from \$425,000 to \$681,000, which would carry a difference of \$86,702 to \$194,702. That difference can be attributed to the list of enhancements not accounted for in the above table, but included in the design for durability, energy efficiency and responsible community development.

Photos 1A and 1B

Typical Mariposa construction featuring a flat site, slab on grade foundation, hardboard siding, asphalt shingles, no Landscaping, energy inefficient cooling with roof-top maintenance. House cost is \$135,000, not including land, access, water and septic.



Photos 2A and 2B

Typical Mariposa construction featuring a flat site, slab on grade foundation, plywood T1-11 siding, asphalt shingles, no landscaping, individual propane service. House cost is \$102,000, not including land, access, water and septic. This house was damaged by wildfire, with the native grass burning to the house and propane tank. Irrigated front lawn prevented loss of house. Four adjacent houses burned.



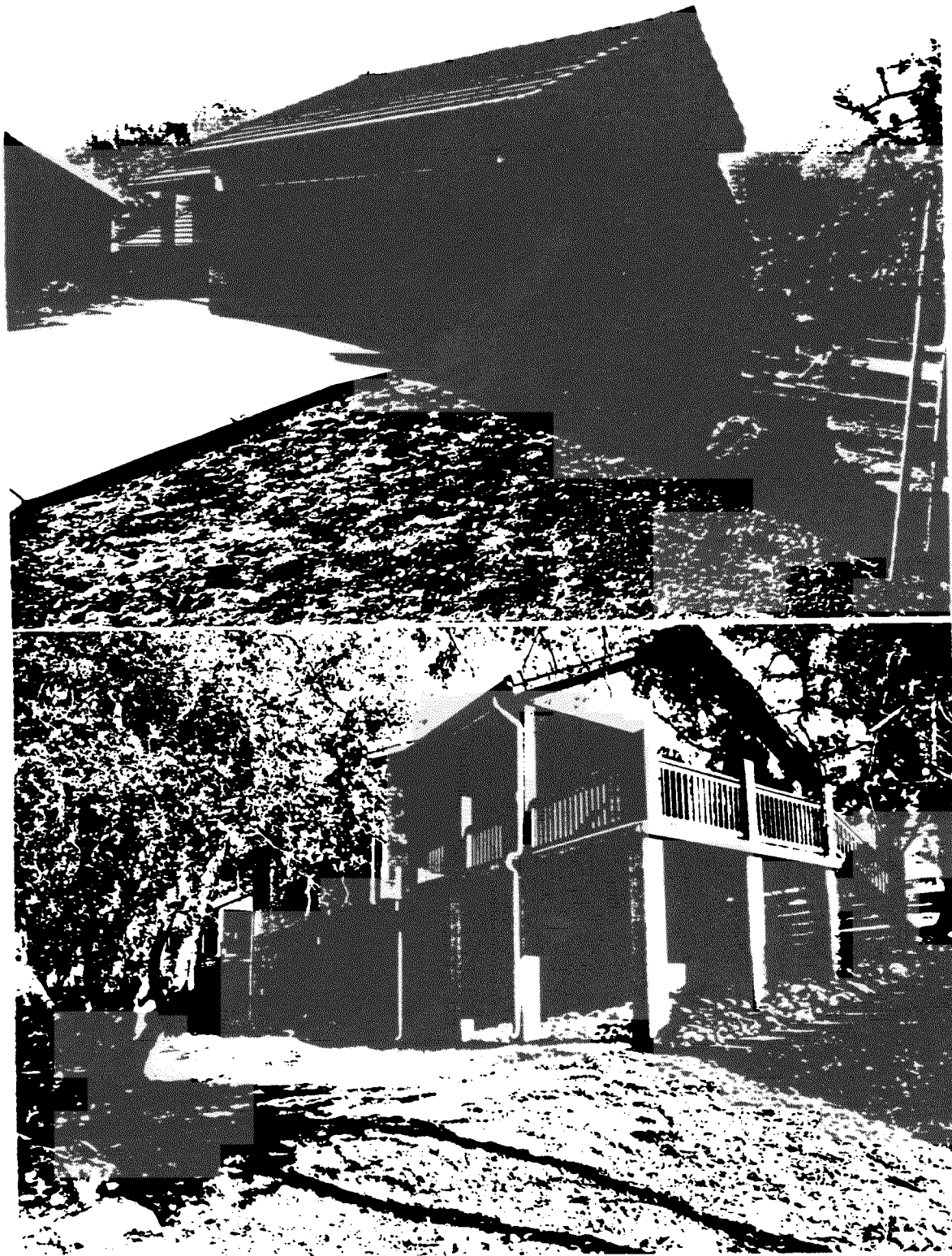
Photos3Aand3B

Mariposa construction featuring a sloped site, stepped foundation, plywood T1-11 siding, asphalt shingles, inefficient cooling system, no landscaping, individual propane service. House cost is \$135,000, not including land, access, water and septic. Five acre site allowed builder to spread house and garage to minimize impacts of slope.



Photos 4A and 4B

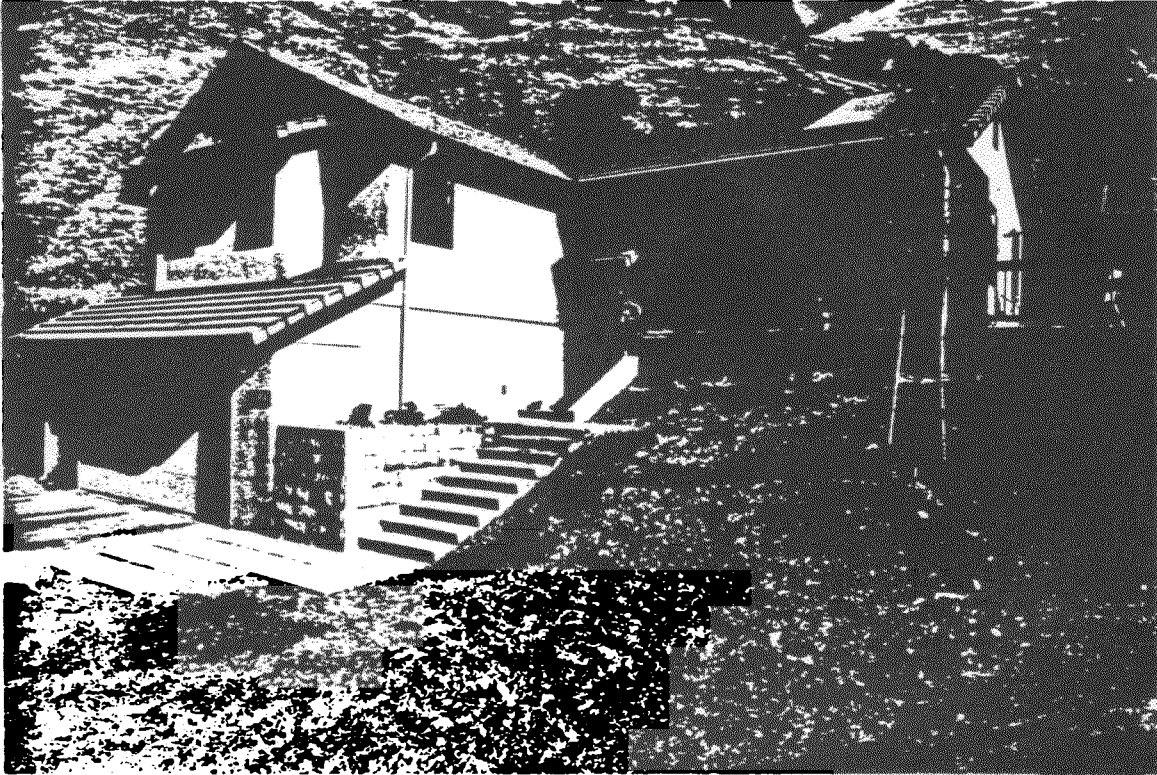
El Portal construction featuring stepped foundation, stucco finish, tile roof, zero lot line setback, landscaping (not completed), attached garage and maintainable HVAC. Note fire resistive construction.





Photos 5A and 5B

El Portal construction featuring stepped foundation, stucco finish, tile roof, zero lot line setback, landscaping (not completed), attached garage and maintainable HVAC. Without the compact, stepped design of the house in Photo 5B, that site would have been unbuildable.





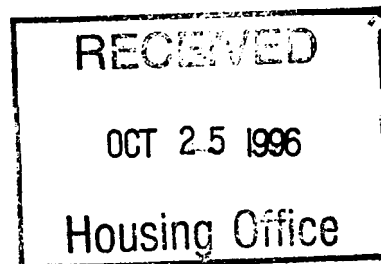
United States Department of the Interior *Attachment 2*

NATIONAL PARK SERVICE  
GRAND CANYON NATIONAL PARK  
P.O. BOX 129  
GRAND CANYON, ARIZONA 86023-0129

IN REPLY REFER TO:

D3415 (GRCA 8211)

OCT 15 1996



MEMORANDUM

To: Director, National Park Service  
From: Superintendent, Grand Canyon National Park  
Subject: OIG DRAFT Special Report on the Cost of Construction of Employee Housing at Grand Canyon and Yosemite National Parks

The following are comments on the draft special report from Grand Canyon National Park.

**Housing Type:** The subject report says in the section titled Employee Housing at Grand Canyon National Park (immediately following Table 1) that the park chose to construct 59 single-family homes in lieu of other, more dense housing types. It further states that this decision left an estimated 150 employees "living in deficient housing at the completion of this housing construction." We would like to point out that our intent from the start was to construct both single-family and multi-family housing. Funding requests and package 143 planning and design documents reflect this intent. The single-family housing was constructed first - apartment units (now in design) will follow. In the Introduction, the report states that the housing need at Grand Canyon is 253 housing units. This is taken from a 1991 Study Report on Housing and Community Facilities - the figure was the estimated need for the South Rim only. Since that time, Grand Canyon has done a GMP and determined the South Rim need for housing to be 170 units over the next 15 years (taking the 59 under construction as given). Point is, there was never any assumption that the single-family housing currently being built would alleviate the entire housing need on the South Rim. Multi-family housing, relocation of some jobs outside the park, and construction of housing outside the park are all being considered to meet the remaining need.

**\$390,000 per House:** Table 1 of the report states that the 23 homes at Grand Canyon cost a total of \$8,971,970, an average of \$390,000 per home. Figures obtained from the Denver Service Center lead us to reach a different conclusion.

Infrastructure for 23 homes (17%)	\$1,352,722
Construction of 23 homes (includes \$575,413 or 13% for changes and \$164,763 in utility contracts)	\$4,479,735 (58%)
Planning/Design/Supervision for 23 homes (25%)	\$1,949,805
TOTAL for 23 homes	<u>\$7,782,262</u>
AVERAGE for 23 homes	\$338,359

**Contributing Factors:** Even \$338,359 is high for a relatively small single family home. We believe there are three categories of factors which contribute to these costs being higher than new homes in surrounding communities: construction on NPS lands and the mission of the National Park Service, federal requirements and the circumstances of the site, and commitment to quality and energy efficiency.

Resource-sensitivity costs include those attributable to the very tight building envelopes provided to the contractor (absolute minimum tree removal on a heavily wooded site) , designs which are compatible with the existing architectural character of the area, and an archeological survey of the site prior to construction. These requirements at Grand Canyon National Park apply to non-NPS builders as well as to the NPS. In the private sector, there is seldom a building envelope requirement and the site is cleared and flattened prior to construction. This gives the contractor freedom of movement across the entire site. Strictly confining the contractor's activity to protect the park's resources incurs a cost which is difficult to quantify. Constructing designs which are compatible with existing architectural character means wood siding, timbers, and keeping the massing at an intimate scale. Compared to a mass-produced box house, this is more expensive. Conducting an archeological survey of the site ensures the resources of the park are not destroyed by construction. This added about \$40,000 to the cost of the 23 homes discussed in the report.

Federally related costs include the nine listed in Table 5 of the report plus others. We take exception to some of the assumptions made in Table 5. For instance, Archeological Studies/Endangered Species Act (read environmental compliance) for the Grand Canyon project included preparation of an Environmental Assessment (EA), mailing the document out to a list of over 100 names, reading and compiling comments on the document, and writing a Finding of No Significant Impact. The cost of this work is included in the Planning figures above. Preparation of the EA requires site surveys for archeological sites and threatened/endangered species. Private sector builders on private land are not required to do an environmental assessment of any kind.

The impact of Davis-Bacon wages may depend on the contractor. Our experience is, when procuring work from the area contractors, they will ask whether "prevailing wage" must be paid or not. If not, their quotes can be as little as half the cost of including "prevailing wage" on smaller-scale projects.

Remote Location costs conceded by the report in Table 5 total about \$212,000 for over \$5 million of work - about 4%. We believe that figure should be much higher for the following reasons. First, there is no local pool of labor from which contractors can draw. All labor must be either transported daily from surrounding towns or provided with temporary housing near the site. Transporting labor from surrounding towns (at least an hour one way) costs time and money - temporary housing is also hard to find and therefore expensive. Second, we find that many contractors won't even bid jobs at Grand Canyon - there is plenty of work in more populated areas of Arizona without the hassles. And, third, supplies must all be transported an additional 75 miles from the nearest distribution point (Flagstaff). If a supply of something is exhausted on-site, it's a 150 mile round trip to the hardware store.

Unusual Site Conditions at Grand Canyon means excavation in rock. Virtually 100% of excavation (for utility trenches, foundations, and even some roadwork) was in limestone. This type of excavation requires special, expensive equipment. A "Roc-Saw" was used by the Grand Canyon contractor and has proven to be the most effective way to trench in this area. These trenchers cost about \$1,000,000 to buy and rent for at least \$300 per hour.


The federal procurement process is also partly to blame. The contract documents for this project include 108 sheets of drawings and 2 volumes of specifications. There is a cost associated with understanding this complexity. The contractor is required to submit for advanced approval hundreds of items he proposes to use in the project. He is required to submit weekly payroll reports to the government. There are numerous other reporting requirements. None of these requirements apply to private sector developers. Although we have no quantification of these costs, there can be no doubt that they exist.

Commitment to Quality and Energy Efficiency means specifying products which are durable, don't require a lot of maintenance, and are efficient. The houses in question are for a rental market, as opposed to the private sector where similar houses are intended for purchase. Renters are likely to treat the home with less care than a home owner would. Private sector developers do not have to maintain the homes they build. The maintenance staff which will have to maintain these buildings already has a multi-million dollar backlog of work. For these reasons, quality, durability, and low maintenance were important considerations in the specifications.

Energy efficiency in these homes means things like providing reclaimed water mains and double-plumbing homes. Use of reclaimed water (produced at the wastewater treatment plant on the South Rim) reduces use of potable water (which comes from a spring in the Grand Canyon, travels 17 miles in a pipe and is pumped up 3000' to get to the South Rim), conserving park resources and electricity. Solar orientation and efficient electric heaters eliminated the need for about \$500,000 in gas (propane) tanks and piping and the further land disturbance they would have caused. Well insulated walls and ceilings, water and power efficient fixtures are becoming standard, nationwide.

**Private Sector Comparison:** The comparison of Grand Canyon's homes to home sales in Flagstaff and Williams is comparing apples to oranges. Some of the reasons are outlined above. On the private sector side, the homes being held up for comparison are a) existing homes, not necessarily recently built and, b) probably of inferior quality. If the average cost of a home in Flagstaff is \$175,000, what is the average age of a home in Flagstaff? Is it built to provide quality housing in a rental market for 50 years? How much will the purchaser need to spend to make the home "like new"? We believe a house in Flagstaff which was built to last 50 years in a rental housing market, to be maintained by the builder, would cost more than the \$175,000 average sales price.

**Summary:** The 59 homes currently under construction at Grand Canyon will help solve the park's housing problem. However, it has always been our plan to attack the problem from several directions, including the construction of higher density housing to meet the needs of other employees. The first 23 homes cost an average of approximately \$338,000 each, higher than similar housing would cost in the private sector. There are several reasons for the higher costs including being sensitive to the various resources of the national park, federal requirements, the circumstances of the site, and building-in quality for extended life and durability. Direct private sector comparisons are meaningless.

  
for Robert L. Arnberger



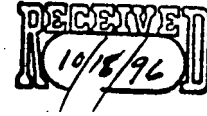
# United States Department of the Interior

NATIONAL PARK SERVICE  
DENVER SERVICE CENTER  
12795 W. ALAMEDA PARKWAY  
P.O. BOX 25287  
DENVER, COLORADO 80225-0287

IN REPLY REFER TO

F4217 (DSC-D)

OCT 17 1996



Memorandum

To: Director, National Park Service

Through: Acting Associate Director, Professional Services, WASO  
*[Signature]*

From: Acting Director, Denver Service Center

Reference: Yosemite and Grand Canyon, Employee Housing, YOSE 504 and GRCA 143

Subject: Review Comments, Draft Special Report, Cost of Construction of Employee Housing at Grand Canyon and Yosemite National Park Service, September 1996

We have reviewed the subject draft report and provide the following response. We do not concur with a majority of the findings. Specifically, we believe there are extraordinary cost issues related to construction in national parks that are still not acknowledged by the Inspector General.

1. Planning, design and construction costs for the private sector are not comparable to the National Park Service. The specific comparative locations do not reflect conditions in either park. The report compares housing at Yosemite National Park to privately constructed housing located in Merced, California, and housing at Grand Canyon National Park to privately constructed housing in Flagstaff, Arizona. In both cases, the construction of the park housing was compared to a traditional "urban-style" housing development where a private developer can build on well-graded lots, with little vegetation and within close proximity to established utility systems.

Planning, design and construction costs for other federal agencies are not comparable to the National Park Service. The per unit housing cost of \$105,000 for Corps of Engineers, 220 multi-family housing units supports the benefits in the economy of scale for the construction of large scale housing projects.

2. We do not concur with the costs identified as "Specialized Federal Expenses" listed in Table 5. Specifically, the increased costs per house for Yosemite NP should be \$236,298 rather than \$94,493.

Revised Table 5 Specialized Federal Expenses  
For Yosemite National Park

Description	Original Table 5 Costs	Adjusted Table 5 Costs
Davis Bacon Wages	\$64,559	\$64,559
Buy American Act	0	0
Archeological Studies	0	17,230
Threatened and Endangered Species Act	0	0
Remote Location	17,766	17,766

Unusual Site Conditions	5,976	71,500
Requirements of Small Business Administration Minority Program	0	0
Americans with Disabilities Act	2,592	2,592
Fire Suppression	3,600	3,600
Site Utilities	0	26,262
Open Space and Recreational Facilities	0	\$ 32,789
Totals	\$ 94,493	\$236,298

We agree with the extraordinary costs identified for related Davis-Bacon Wage rates, the Buy American Act, remote location, requirements of Small Business Administration Minority Business Enterprise Program, the American with Disabilities Act, and fire suppression. Other “extraordinary” costs that need to be considered include:

- Significant resources were spent at Yosemite for archeological investigations and environmental compliance documentation as required by the National Environmental Policy Act (NEPA) which is not required by a private sector builder.

- The OIG report states "zero" expense for investigation of resource sensitive issues. Considerable time was spent at Yosemite monitoring cultural and natural resources at total cost of \$327,533, or \$17,230 per house.

- The total increased costs for unusual site conditions at Yosemite were \$71,500 per house and not \$5,976 as stated in the OIG report. The geotechnical conditions at Yosemite include extreme slopes (average of 16%) and glacial deposits of large granite boulders resulting in significant foundation designs, additional protection for the housing area, and costly excavation. We estimate that these conditions increased the cost \$69,000 per house. In addition, protection from mud flow debris areas increased the cost per house \$2,500 over the foundation and excavation costs found in a track housing project.

- The OIG report did not address the true costs for utilities. National Park Service costs for constructed utility services include general facility improvements such as increased water pumping capacity, water disinfection improvements, expanded propane storage, and increased water storage. A private sector contractor would typically not include general site improvements. These costs are usually financed and constructed by cities or special assessment districts. Private homeowners are assessed for this cost through taxes. The increased expense for utility services at Yosemite are \$22,947 for water and sewer and \$3,315 for propane, for a total cost of \$26,262 per house.

- A cost component for the construction of open space and recreational facilities at Yosemite was not included in the list of specialized federal expenses. We estimate the increased costs are approximately \$32,789 per house.

3. Labeling construction materials as “enhancements” is incorrect and misleading. Most of the materials are either mandated by legislative action or are NPS mission-related.

- Durable and “high quality” construction materials, Although some of these materials are not commonly used in traditional track, “private-owned,” single family houses, the National Park Service has experience that supports the use of heavy duty materials for the highly transient

population that typically rents these units. The use of durable, maintenance-free products minimizes recurring maintenance costs (labor, materials, etc.). Declining base budgets and limited FTE's influence decisions related to durability and maintenance. Although the Park Service did not provide written documentation in the form of life cycle costs to support the use of these materials, there was documented discussion with park maintenance staff regarding historical use, and recurring maintenance on specific issues (e.g. exterior siding, flooring, doors, plumbing, windows, and electrical wiring). Their knowledge of labor costs and material life were used to make collective decisions on the use of these items.

•Special energy efficient materials, systems and appliances. The use of energy efficient products are mandated through the Energy Conservation Standards for New Federal Residences (1 O CFR 435). All new federal housing, such as that at Grand Canyon and Yosemite National Parks must meet or exceed the energy performance standards established in this regulation. Life cycle cost Information regarding the selection of heating and lighting systems were provided to the OIG during preparation of the audit.

•Handicap accessible facilities. According to current legislation, the National Park Service is mandated to provide a portion of housing for disabled employees. The units are designed in accordance with minimum requirements outlined in the Uniform Federal Accessibility Standards and with the Americans with Disabilities Act.

•Fire retardant materials, in-house sprinkler systems and autodialer smoke detectors. Requirements for fire protection and fire suppression for employee housing are established in the Housing and Design and Rehabilitation Guideline NPS-76. Specific building codes reflect the need for habitat safety and protection (NFPA 101 Life Safety Code), multi-family construction (ICBO Uniform Building Code) and Loss Control Guidelines (NPS-50). Fire protection is a real threat to these remote park locations. Yosemite NP experienced the loss of 13 housing units at Forestra. The same 1991 fire required evacuation of the El Portal Rancheria Flats area; however, no property or human life was lost. The OIG labeled specific fire resistant materials (stucco siding and concrete tile roofs) and fire suppression systems (in-house fire sprinkler systems and autodialer smoke detectors) as "enhancements," rather than acknowledging they were required by the code, or requested by the park as necessary to prevent the loss of life and property at a remote housing area.

•Hillside location. El Portal has been the designated site set aside by Congress for administrative services since 1958. Various planning efforts have struggled with appropriate housing locations within the designated area. The hillside sites were selected only after elimination of the other more "buildable" sites due to site constraints such as: areas occupied by park operations such as wastewater treatment, etc.; existing development (non park service structures); floodplain zones; known archeological sites for Native American burials; contaminated soil (barium from residual mining tailings), known geological hazard area due to mud slides; or areas inhabited by a threatened and endangered species. These sites were not selected to provide scenic views.

4. The report states that one of the reasons for the "high" housing costs are the "high costs of DSC planning, design and construction." The report accurately identified that a total of \$29.2 million has been spent for planning, design and construction of housing at both parks and that \$8.7 million was spent by the DSC for planning, design and construction supervision. The percentage of the total funding programmed is 29.8% which is within industry standards for the complex type of design and full-time construction supervision. Private developers do not typically employ full-time construction, rather they depend on building inspectors for their quality control.

5. The average cost per house at Grand Canyon NP presented in the OIG report is incorrect. Table 1 of the report states that the 23 homes at Grand Canyon NP cost a total of \$8,971,970, or an average of \$390,000. The actual average cost of the housing is \$338,359 based on the following calculations:



Infrastructure costs for 23 homes	\$1,352,722
Construction of 23 homes	\$4,479,735
Planning, design & full-time construction supervision	<u>\$1,949,805</u>
Total cost, 23 homes	\$7,782,262

Average home cost, Grand Canyon NP           \$ 338,359

6. The OIG report statement that the Park Service has basically completed its housing construction at the Yosemite NP is not accurate. The Park Service has not completed the housing at El Portal; it has only completed that portion of the Line Item construction program funded to date. There remains five single family homes at Rancheria Flats and multi-family housing for 108-employees to be constructed. This is identified as the proposed action (Alternative E) in the Addendum to the Yosemite Valley Housing Plan, Draft Supplement to the Final Impact Statement for the 1980 General Management Plan.

7. The OIG report statement related to the “two 40-unit dorms” is misleading. The 1991, 1992 and 1993 Park Service budget requests included the cost of the proposed facilities, based on the employee numbers and housing types considered appropriate during the mid-1980’s. At that time, planners estimated there would be a need to house 96 employees and two dorms were proposed. A formal housing study initiated by the park and DSC in 1991 assessed current and project employee numbers, housing needs and additional sites beyond El Portal (including Foresta and Wawona). The study indicated that the dormitory housing proposed earlier was not consistent with the employee population at Yosemite NP. Single occupancy studios were proposed in lieu of the dormitory units late in 1992, after submission for the FY93 program.

8. The OIG report notes that as of January 1996 the Park Service has not requested funding to construct the studio apartments. The park is preparing to release the “Addendum to the Yosemite Valley Housing Plan, Draft Supplement to the Final Impact Statement for the 1980 General Management Plan” for public review later this fall. The Park Service will request additional funding for housing at Yosemite NP upon concurrence of the number and type of units needed once the impact statement is approved through the NEPA planning process.

**In conclusion**, we appreciate the opportunity to review and comment on the report. In line with the OIG’s recommendations, staff at both Grand Canyon and Yosemite national parks have entered into discussions with private developers regarding the opportunities for design, build and operation of housing units for Park Service staff.

The Denver Service Center recognizes the importance of the report’s recommendations as the National Park Service faces reduced staffing levels and construction budgets. The National Park Service, and the Denver Service Center in particular, have taken major steps to streamline the planning and design process wherever possible, and commits to providing parks with quality, cost effective products. There are, however, certain issues that influence the construction cost of all facilities that are constructed within the boundaries of national parks that are inherent to mission mandated and legislatively driven requirements.



G. Rodger Evans

cc:  
WASO-Frank Seng  
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Attachment 4

Comments on IG report on Housing Construction Costs at Yosemite and Grand Canyon National Parks

Page 7.

We would like to clarify the reference to the January 1996 communication with the Departmental Quarters Officer. In January and again in February 1996, the Park Service requested that the Departmental Quarters Offices, which is under the Bureau of Reclamation, review certain administrative restrictions that have over the years, been necessary at one time or another and review them in light of today's fiscal climate. These administrative restrictions are NOT limited by the Congress. We suggest that the auditor may have confused this with the 10 percent limitation on rental increases, which was imposed by the Congress in FY 1992, but which was recently lifted with the passage of the FY 1996 Appropriations Bill in April 1996.

Page 10.

Regarding the rescission of OMB Circular A-18, the appropriate provisions WERE incorporated into Circular A-45. Circular A-45, therefore, also provides policies and administrative guidance respecting construction of federally-owned housing, not just policies and guidance on rental rates as stated in the auditor's report and as stated in the IG's report, A-45 does not specify a limit on construction costs. Circular A-18 did not impose such a limitation.

We would also like the reader to understand that with the cost limitation in place, the Service was unable to construct quality housing units; therefore, we found that trailers could be purchased instead. While at the time that may have been a reasonable compromise, trailers have proven to be extremely costly to maintain, are expensive for the tenants to heat and cool and generally are not desired living units. The Secretary of the Interior recognized this and since his tenure began, has made it one of his personal goals to help eliminate the trailers from the parks.

While the auditor's state that we have emphasized the environmental and quality aspects of planning, designing and constructing housing over the cost aspects, we believe it is important to also recognize the negative results of a cost limitation.

Page 10.

We repeat the Service's position as provided to the auditors in our

comments dated June 14, 1996, to their preliminary draft special report. Housing is not viewed as an inducement or collateral compensation for NPS employees.

Page 27. - Recommendation

The IG's recommendation to review the strategy that the parks, particularly Grand Canyon and Yosemite National Parks, have for meeting their employee housing needs to ensure that housing is designed and constructed in a cost-effective manner, fails to recognize what the Service has done over the last 2 years to help accomplish this.

In response to the 1993 and 1994 General Accounting Office (GAO) reports, the Service has worked with the National Park Foundation and supported Secretary Babbitt's desire to have the Foundation as partner in improving NPS employee housing, particularly outside of park boundaries where the Service does not have legal authority to conduct business.

Not all attempts resulted in successful avenues for the Service. For example, Fannie Mae was not willing to develop a financing program specifically for NPS employees, but only to help promote existing opportunities.

The Service began developing an in-house needs assessment review of housing needs in 1994, with a kick-off session with approximately 36 park areas in February 1995. Process is ongoing and will be completed in all park areas in 1997.

In July 1995, we began working with the BIA to amend their contract to have independent, non-biased, consistent and more thorough studies done at four park sites. Final reports are expected within the next month. The process will be analyzed for potential Servicewide merit; however, we are developing the framework for the next phase of housing studies to be conducted in 1997. The housing studies will include a cost estimate for repair and rehabilitation for better documentation on backlog of need.

During congressional hearings on our Appropriations Bill for FY 1996, the Service went on record opposing the 10 percent limitation on rental increases. In April 1996, the limitation was lifted. If this had not been accomplished, any changes to the rent setting process/formula which would result in a rental increase would be all but negated for NPS due to the 10 percent limitation on rental increases. Further, any improvement we are making in the condition of housing as a result of recent appropriated funds were not realized in rental receipts as long as the 10 percent cap was in place.

In an effort to develop strategies for improved planning, design and construction of employee housing to replace trailer units throughout the Service, in 1994 we began to develop a catalog of Standardized Housing Designs. This catalog presents prototypical

plans recommended for use in constructing new housing for the National Park Service. It is intended to be used as a tool for the parks, professional support groups within the Service and private A&E firms to make housing choices and to guide planning and site development for housing.

This selection of prototypical (standardized) housing plans can be flexibly adapted to unique programmatic, cultural, climatic and physical site constraints of park locations. They will accommodate pre-manufactured or site-built construction technologies. They employ time and cost-efficient methodologies for selecting, adapting and documenting housing designs that will better serve park funding and scheduling constraints.

Final documents include construction drawing, (on disk) for architectural, structural, mechanical and electrical. Specifications (on disk) including Division 1-General Requirements and a user's guide for document adaptation that will allow the process to be time and cost-efficient.

The Service is committed to this cost-effective concept and has geared funding criteria for FY 1997 and beyond around the use of these designs.

Another recommendation by the GAO which the Park Service has acted upon is the Legislative Package on Housing. During the past 12 months, congressional hearings have been held on numerous pieces of legislation crafted to give the Park Service a variety of authorities to expand the alternatives available for construction and repair of employee housing and to rely on the private-sector to finance or supply housing, to the maximum extent possible, in order to reduce the need for Federal appropriations for new construction and ongoing maintenance and operation.

Some versions of the legislation recognize the need for the Service to review criteria under which housing is provided to employees, and to eliminate unnecessary housing. To address this, as stated earlier, we have begun to lay the groundwork for additional studies to be conducted at each park site. Phase I studies should be underway during FY 1997.

On October 3, 1996, the Senate passed and sent to the President for signature, legislation, "to develop where necessary, an adequate supply of quality housing units for field employees of the National Park Service within a reasonable time frame."

The House had previously passed similar language on September 17, 1996.

The bill contains provisions that would require the Service to conduct a series of studies intended to help improve the management of the employee housing program. It also grants considerable new authorities such as expanding the alternatives available for

construction and repair of essential government housing, and relying on the private-sector to finance or supply housing, to the maximum extent possible, in order to reduce the need for Federal appropriations.

These are similar authorities to those Congress gave DOD in 1996. The DOD has turned to private industry to help speed up their \$30 billion initiative to improve military housing.

**STATUS OF SPECIAL REPORT RECOMMENDATION**

Finding/ Recommendation Reference	Status	Action Required
1	Unresolved.	Reconsider the recommendation in the context of further review of the issue, and provide an action plan that includes target dates and titles of officials responsible for implementation.

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