

Comments of Adams County Commissioners
Adams County, Washington
Regarding
Draft Environmental Impact Statement, Odessa Subarea Special Study

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I. Introduction and General Principles

These Comments are submitted by the elected Commissions of Adams County, Washington, in response to the U.S. Bureau of Reclamation's and Washington State Department of Ecology's publication of the Draft Environmental Impact Statement, Odessa Subarea Special Study.¹ We appreciate the consistent and proactive attention of the Bureau of Reclamation, Washington State Legislature and the Washington State Department of Ecology addressing a surface water solution to the Odessa area's groundwater consumption problem. These comments are intended to be constructive in assistance of that effort.

II. Purpose and Need

We concur with the statements of purpose of the special study and the need for a Columbia River surface water supply to replace deteriorating groundwater supplies in the Odessa Subarea, some of which lies beneath Adams County. Adams County is located in Eastern Washington bordered by Lincoln (North), Whitman (East), Franklin (South) and Grant (West). The Adams County seat is located at Ritzville, Washington, 60 miles south of Spokane. Irrigated agriculture represents a major portion of the economy of Adams County and irrigated acreage represents a significant portion of Adams County's tax base.

Deep well irrigation was established in Adams County in the 1960s in order to maximize the agricultural potential of prime agricultural soils while the Columbia Basin Project was under development as contemplated by the Columbia Basin Project Act. Groundwater withdrawals from these deep wells in the Odessa subarea of the Columbia Plateau regional aquifer have significantly reduced of water levels in that aquifer system since the 1960s. We are concerned with the information that only 20-25 percent of the groundwater supply in that portion of the regional aquifer system may be remaining. We note, and are concerned by, the conclusions reached by Reclamation and the U.S. Fish and Wildlife Service about the extent and severity of the problem:

“Since the early 1980s, groundwater levels have progressively dropped by 100 to 200 feet in nearly half of the production wells, at an average decline of 6 to 8 feet per year. . . . As a result of the current conditions of groundwater decline in the Odessa Subarea, the ability of farmers to irrigate their crops is at risk. Domestic, commercial, municipal, and industrial uses, and water quality are also affected.”²

¹ United States Bureau of Reclamation, Washington State Department of Ecology, “Draft Environmental Impact Statement, Odessa Subarea Special Study, Columbia Basin Project, Washington,” September 26, 2010. (hereafter “DEIS”). Prepared pursuant to its Federal Notice of Intent to Prepare an EIS, Federal Register, August 21, 2008.

² DEIS, p. 1-2.

“Groundwater levels in wells of the Odessa Subarea have steadily declined since substantive pumping began in the 1960s. Since the early 1980s, groundwater levels have dropped by 100-200 feet. In nearly half the production wells, at an average decline of 6 to 8 feet per year. In many cases, wells have been drilled deeper to access water, or use of wells has been discontinued. Most of the groundwater wells currently are 800 to 1,000 feet deep, but some are as deep as 2,100 feet.”³

“Based on current trends, it is estimated that groundwater supply for most groundwater-irrigated lands in the Project Area will fail within 10 years.”⁴

“The purpose of the Project is to avoid potential economic loss, in the near term, to the region’s agricultural sector as a result of continued declines in the quantity and quality in Odessa Subarea aquifers. Groundwater in the Odessa Subarea is currently being depleted to such an extent that water must be pumped from depths as great as 750 feet. Domestic, commercial, municipal, and industrial uses are also affected by decreasing water supplies.”⁵

This rate in deterioration of water supply and well competence presents an immediate and serious prospect of economic deterioration in Adams County, a need that mandates adoption of the project under consideration: delivery of Columbia River surface water, already stored in Roosevelt Lake behind Grand Coulee Dam pursuant to existing storage and delivery rights, to replace the failing groundwater supply. Adams County’s population is growing. We will all be affected. It is incumbent upon the County Commission to advocate the most robust potential action that will beneficially address Adams County’s needs.

The risk of climate change exacerbates the purpose and need for delivery of Columbia River surface water. The groundwater beneath the surface in the Columbia Plateau regional aquifer is ancient, placed there under geoclimatic conditions outside of our general knowledge. The surface water available in the Columbia River is very much the consequence of our current climate, the propitious latitudinal geography of the Pacific Northwest, and the more northern headwaters of the Columbia River. We must be conscious also of the varying climate conditions under which the agricultural practices currently utilized on the Columbia Plateau, and specifically within Adams County, are responsive if climates change.⁶ We agree with the U.S. Fish and Wildlife Service’s and Washington State Department of Ecology’s observations:

³ DEIS, p. 2-15.

⁴ U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, “Draft Fish and Wildlife Coordination Act Report for the Odessa Subarea Special Study,” September 16, 2010, hereafter “DFWCAR”, p. 31.

⁵ DFWCAR, p. 5.

⁶ http://www.ecy.wa.gov/programs/wr/cwp/cr_climate.html

“The climate in eastern Washington is arid, with an average of 7.4 inches of precipitation and 17.4 inches of annual snowfall at Ephrata, and 10.9 inches of precipitation and 16.3 inches of snowfall at Odessa (Washington State Climatologist,2009). . . . Since economic and political impacts and responses are linked to climate change, become harder to predict, and confidence in the prediction decreases the further into the future they are made, the more divergent the scenarios become into the future.”⁷

“For the Pacific Northwest, increases are projected in precipitation, temperature, and the length of droughts. However, increased precipitation is projected to come more in the form of rain rather than snow which will result in decreased groundwater recharge and less spring moisture, due to more run off (CIGG 2009, p. 198). Projects for Lind show that, although annual rainfall will increase by 10-14 per cent by 2080, seasonal rainfall (spring and summer) will only increase by 10-12 percent while non-seasonal (fall and winter) rainfall will increase by 21 to 16 per cent (CIGG 2009, p. 198). Increased drought will harden surface soil and prevent absorption of rainwater. These factors are projected to equate to less *effective* precipitation. Forest and grass land cover is predicted to likely increase (Wooten 2003, p. 9). A net decrease of shrub steppe habitat in the Project Area will likely result, as the boundaries of shrub steppe habitat shift northward (Shafer *et al* 2001, p. 18; Chambers and Pellant 2008, p. 30).”⁸

“In addition to changing supply, climate change has the potential to change existing crop demands. For example, in Eastern Washington (within the greater Columbia River Basin), US Geological Survey reports approximately 1.7 million acres of irrigated crops in the greater Columbia Basin. If 20 years from now climate change has resulted in a need for an added inch of water per acre, due to hotter weather and decreasing summer rain, then 140,000 acre-feet more water will be needed to maintain current crop production. There is also 5.3 million acres of non-irrigated agriculture in the basin (e.g. dry-land wheat). Increasing temperatures and shifting of water availability due to climate change may result in some of these lands moving to irrigation to maintain yield and profitability, or a decrease in yield for those that cannot obtain irrigation water.”⁹

We recognize that the economic effects of the loss of groundwater supplies as a resource to agricultural production in Adams County could be made worse by a changing climate. We also recognize, and hope, however, that changes in precipitation patterns might actually be positive:

“USDA (2008) reports that Adams County had a 9 per cent increase in the number of farms, Grant County had an increase of 7 percent in the number of

⁷ DFWCAR, p. 30.

⁸ DFWCAR, pp. 30, 31.

⁹ Washington State Department of Ecology, http://www.ecy.wa.gov/programs/wr/cwp/cr_climate.html

farms, and Lincoln County had an increase of 7 percent in the number of farms. Only Franklin County had a decrease (-6 percent) and the amount of land under agriculture increased in all of the above listed counties except Franklin. With limited water resources available in the Project Area, farming has largely been dryland farming of wheat. However, with the availability of Columbia River water in the area, shifts in the nature, composition, and timing of crops are expected. For instance, yield of dryland wheat will likely increase by 35 percent in Lind and 36 percent in Odessa by the year 2080, without any changes in land use, merely due to increased rainfall and increased carbon dioxide in the atmosphere (CIGG 2009, p. 203-204). Rainfall is expected to increase by 25 millimeters (~ 1 inch) for the same period (CIGG 2009, p. 198).”¹⁰

III. Preferred Alternative

We oppose the No Action Alternative, primarily because of its significant negative economic consequences to Adams County’s economy. The No Action Alternative will also cause significant reductions to the underlying value of real property in Adams County. The Adams County tax base is premised on these real property values. The revenues derived from that tax base provide governmental services to all the citizens of Adams County. These services include public works, law enforcement, criminal justice, other judicial services, planning, etc.

Among the action alternatives, we most prefer Alternatives 3A, 3B, 3C, and 3D because they do the most to address the conspicuous and aggravated problem of deteriorating groundwater supplies in Adams County. As we are, ourselves, government officers with fiscal responsibilities, we recognize that other alternatives, including 2A, 2B, 2C and 2D, may be more cost effective. But only full development will maximize the benefits of replacing unreliable water supplies with reliable ones, benefits which are essential to the lives of agricultural communities within Adams County, particularly those protected by the factor of environmental justice.

IV. Environmental Justice

Selection of the No Action Alternative would be unjust to ethnic minorities and low income people in Adams County.

Section 1-101 of Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” dated February 11, 1994, requires agencies to identify and address disproportionately high and adverse human health or environmental effects of their actions on minorities and low income populations and communities as well as the equity of the distribution of the benefits and risks.

To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by

¹⁰ DFWCAR, p. 34.

identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.

The DEIS should balance the detrimental effects of the No Action Alternative against the positive effects of the action alternatives upon traditionally disenfranchised populations. The benefits of the action alternatives inure more significantly to minority or traditionally disenfranchised populations, because these populations constitute a larger than average component of Adams County's general population. And the benefits of the action alternatives which improve the economic stability and lifestyle of these minority or traditionally disenfranchised populations also improve the general economic stability and lifestyle of the entire Adams County population because they are so large a component of the broader population.

The DEIS discussion of Environmental Justice and the impact of the project alternatives on traditionally disenfranchised populations should be redrafted. 2010 Census demographic data, which is scheduled to become available in March 2011, should be reviewed to determine current demographics within Adams County. The DEIS' determination of the effect of the No Action Alternative and the action alternatives on these populations should be made again in the light of that information.

DEIS Table 3-51 Race and Ethnicity in 2000¹¹ shows that racial minorities constitute 35% of Adams County's population, compared to the Washington State average of 18.2 %. The same Table shows that the Hispanic or Latino population constitutes 47.1 % of Adams County's population, compared to the Washington State average of 7.5 %. DEIS Table 3.52, Income, Poverty, Unemployment and Housing in 2000¹² shows that 18.2 % of individuals and 13.6 % of families in Adams County's population were below the poverty level in 1999, compared to the Washington State averages of 10.6 % and 7.3%, respectively. The same table shows that 8.7 % of Adams County's workforce was unemployed in 2000. By comparison, 12.8% of Adams County's workforce was unemployed in 2010. These statistics should be re-established based on the 2010 Census.

The DEIS' population growth projections for 2010-2030 are presented in DETR Table NED_MUNI4.—Population projection growth rate by county. These projections do not accurately reflect the disproportionate growth of ethnic populations which typically suffer low income, poverty and housing problems in Adams County. DEIS Tables 3-51 and 3-52¹³ illustrate that Adams County suffers these problems at a disproportionately high rate in the State of Washington. Deteriorating groundwater supply, which would be perpetuated by the No

¹¹ DEIS, p. 3-158.

¹² DEIS, p. 3-159.

¹³ DEIS, pp. 3-158, 3-159.

Action Alternative, affects the people who suffer these problems. None of the action alternatives would adversely affect these populations.¹⁴ However, the DEIS analysis of affect is limited only to direct physical impacts. If disproportionate socioeconomic impact were also considered as a determinant of significance of effect,¹⁵ the degree of affect from the No Action alternative would be greater.

DEIS Table 3-52 states that the median family income in 1999 was \$37,075. Recent Adams County statistics suggest that the current median household income for Adams County is \$33,888, and that the median home value is \$84,300. The median rent is \$430. These statistics should be presented based on the 2010 Census.

The DEIS' public health impacts analysis considers the proximity of ethnic minorities and low income peoples to project actions,¹⁶ but does not consider the public health effects of failing domestic wells on farms or homes near towns. Low income persons are less capable of responding to failing domestic wells by paying to deepen them. Broad public health problems will ultimately increase the costs of public health institutions and the governments that provide them.

Adoption of pro-active enrichment strategies in areas with low percentages of ethnic minorities, while pursuing no action in areas with high percentages necessarily affects them disproportionately in a manner that is unjust. The DEIS findings that the No Action Alternative has "no significant impacts or effects with environmental justice,"¹⁷ and that "no environmental justice impact is anticipated"¹⁸ should be re-examined. The DEIS recognizes the reality that "reduction in irrigated agriculture . . . could impact businesses and people linked to the agricultural industry (including, but not limited to, farm workers, food processing facilities, seed and pesticide companies, and trucking companies). Minority or low-income populations associated with these impacted land uses could also then be adversely impacted."¹⁹ The DEIS should reconcile these conclusions.

V. Land Value Analysis

We are concerned that the average market values of land presented in Table 3-36 of the DEIS²⁰ appear unreasonably low. This appears to be due to their being skewed by inclusion of large amounts of dry farmland and unfarmed land in Adams County. The average acreage market

¹⁴ DEIS, section 4.25, pp. 4-269 – 4-272.

¹⁵ See DEIS, section 4.25.1.2.

¹⁶ DEIS, p. 4-250.

¹⁷ DF-LSSR, p. 4-74.

¹⁸ DEIS, p. 4-271.

¹⁹ DEIS, p. 4-271.

²⁰ Also AgBen2.—Average Market value of land for the four-county analysis area, DETR, p. 9.

value apparently takes into account all land, notwithstanding whether it is irrigated or unirrigated, farmed or unfarmed. No data is presented regarding the market value of irrigated acres versus unirrigated acres. No data is presented regarding the market value of acres irrigated by groundwater versus acres irrigated by surface water (see properties identified in DEIS Maps 1, 3, 4, 5). DETR Table AgBen1.—Census of agriculture number of farms data shows the amount of acreage farmed in the analysis area and the amount of acreage being irrigated in each county within the analysis area. Calculating from the data presented, only 11%, 36%, 43% and 3% of farm acres in those portions of Adams, Franklin, Grant and Lincoln Counties which are within the analysis area are irrigated. Only 3% of the farmed acreage in the four county analysis area will be within the project. (102,618 acres/3,885,663 acres). The average market values of land in these counties, as presented by DEIS Table 3-36, is obviously weighted substantially by the values of unfarmed, unirrigated lands.

Maintenance of real property values in Adams County is an essential function of Adams County government. Real property valuation is the basis of the County's tax base. Maintained real property valuation is also important for enhancing entrepreneurial activity within the County. Enhanced property values increase enhanced creditworthiness, better lending opportunities, and therefore better entrepreneurial activities.

The DETR and DEIS perform no basic or comparative land value analysis. A land valuation analysis should be conducted in accordance with Sections 2.3.5 (9) and 2.3.4 (f), (g) of the Principles and Guidelines. Evaluations should be conducted of properties within the Columbia Basin Project with comparable soils, including both "lands on which the cropping pattern is the same with and without the plan" and "lands on which there would be a change in cropping pattern with the plan."²¹ Values should be established for properties relying on groundwater for irrigation and those that use surface water for irrigation. Land values should be established assuming post-Energy Policy Act market influences and could be corroborated by data from leasehold transactions reflecting return on investment in irrigated and unirrigated farmland.

The highest and best use of the subject properties should also be considered, taking into account the 100 year time horizon otherwise used in the benefits analysis and that properties in the subject area could transition to higher uses, including horticultural and viticultural agriculture, given soil quality comparability with other areas with similar uses and transitional aspects of infrastructure support for those higher and better uses.

We are confident that a land valuation approach will better demonstrate the significant benefits which any of the action alternatives will provide, when weighed against the project costs. We expect to retain appraisal expertise to prepare a report addressing the issue of appropriate land valuation and will submit that to Reclamation and Ecology when it is complete.

When the effect of No Action Alternative on land value has been established, and compared to the effect on land value of the action alternatives, it will become possible to determine the effect of these alternatives on Adams County's tax base, its consequent property tax revenues, and the effect of these on the public services Adams County will be able to provide.

²¹ See Principles and Guidelines, Section 2.3.5 (a).

VI. Economic Justification

The DEIS states that “Acting for the Secretary, Reclamation is authorized to implement additional development phases of the CBP as long as the Secretary finds it to be economically justified and financially feasible.”²² But the Columbia Basin Project Act does not establish economic justification as a statutory prerequisite for completion of the Columbia Basin Project. Rather, the Columbia Basin Project Act presumes that the project is economically justified and establishes a financing paradigm which provides for reimbursement of costs. Congress determined the economic justification for the Columbia Basin Project when the authorizing legislation was originally passed in 1937. Unless Congress acts again to the contrary, the economic justification of the Project’s completion should be assumed.²³ Moreover, a proper comparison of those portions of the Project already completed with those that are not, as contemplated by section 2.3.5 of the Principles and Guidelines, will confirm the economic justification of moving further toward completion of the Columbia Basin Project.

The Columbia Basin Project was begun with the allocation of funds for Grand Coulee Dam pursuant to the National Industrial Recovery Act of June 16, 1933.²⁴ In 1935, Grand Coulee Dam Project was specifically authorized for construction by the Rivers and Harbors Act of 1935.²⁵ Two years later, in 1937, Congress passed the Columbia Basin Project Act of May 27, 1937.²⁶ In 1939, Congress passed two additional Acts authorizing the Secretary of the Interior to investigate and construct water projects. These included the Reclamation Projects Act of 1939²⁷ and the Water Conservation and Utilization Act of 1939.²⁸ In 1943, Congress passed the Columbia Basin Project Act of 1943,²⁹ reauthorizing the Columbia Basin Project “subject to the Reclamation Project Act of 1939.” That reauthorization, now codified at 16 U.S.C. 835,³⁰ provides:

²² DEIS, p. 1.9.

²³ Any determination to the contrary would have the effect of removing the economic benefits of land acquisition by property owners within the Project who had relied upon Congress’ and the U.S. Bureau of Reclamation’s prior actions.

²⁴ Act of June 16, 1933, Ch. 90, 48 Stat. 195, previously codified at 15 U.S.C. Sec. 703 (now omitted).

²⁵ Act of August 30, 1935, 49 Stat. 1028, 1039-1040, Pub. L. 74-409.

²⁶ Act of May 27, 1937, Ch. 269, Sec. 1, 50 Stat. 208.

²⁷ Act of August 4, 1939, Ch. 418, 53 Stat. 1187.

²⁸ Act of August 11, 1939, Ch. 717, 53 Stat. 1418, 16 U.S.C. 590y et seq.

²⁹ Act of March 10, 1943, 57 Stat. 14, Public Law 78-8.

³⁰ 16 U.S.C. 835, The Act was later amended by the Act of Mar. 10, 1943, Ch. 14, 57 Stat. 14.

In addition to the primary purposes for which the Grand Coulee Dam project (hereafter to be known as the Columbia Basin project and herein called the “project”) was authorized under the provisions of the Act of August 30, 1935 (49 Stat. 1028), the project is authorized and reauthorized as a project subject to the Reclamation Project Act of 1939; and the provisions of each of those two Acts together with the provisions of this Act shall govern the repayment of expenditures and the construction, operation, and maintenance of the works constructed as a part of the project.

The Reclamation Projects Act of 1939 set forth the requirements the Secretary must follow when investigating construction “of any new project, new division of a project, or new supplemental works on a project.” Those requirements are now codified at 16 U.S.C. 485h.³¹

No expenditures for the construction of any new project, new division of a project, or new supplemental works on a project shall be made, nor shall estimates be submitted therefor, by the Secretary until after he has made an investigation thereof and has submitted to the President and to the Congress his report and findings on--

- (1) the engineering feasibility of the proposed construction;
- (2) the estimated cost of the proposed construction;
- (3) the part of the estimated cost which can properly be allocated to irrigation and probably be repaid by the water users;
- (4) the part of the estimated cost which can properly be allocated to power and probably be returned to the United States in net power revenues;
- (5) the part of the estimated cost which can properly be allocated to municipal water supply or other miscellaneous purposes and probably be returned to the United States.

If the proposed construction is found by the Secretary to have engineering feasibility and if the repayable and returnable allocations to irrigation, power, and municipal water supply or other miscellaneous purposes found by the Secretary to be proper, together with any allocation to flood control or navigation made under subsection (b) of this section, equal the total estimated cost of construction as determined by the Secretary, then the new project, new division of a project, or supplemental works on a project, covered by his findings, shall be deemed authorized and may be undertaken by the Secretary. If all such allocations do not equal said total estimated cost, then said new project, new division, or new supplemental works may be undertaken by the Secretary only after provision therefor has been made by Act of Congress enacted after the Secretary has submitted to the President and the Congress the report and findings involved. (Emphasis supplied.)

The 1939 Reclamation Act thus establishes a statutory standard authorizing construction of a new division of the Columbia Basin Project. It is a two part standard. First, the new division’s construction must “have engineering feasibility.” Second the “repayable and returnable

³¹ Act of August 4, 1939, Ch. 418, Sec. 9, 53 Stat. 1187.

allocations to irrigation, power and municipal water supply” must “equal the total estimated cost of construction.” The statute contemplates no benefit-cost analysis. Rather, it contemplates a repayment-cost analysis. Only if costs exceed repayments, as allocated to the several water user categories, must the project proposal be newly authorized by Congress.

Likewise, Congress established its policy that a repayment-cost equation, and not a benefit-cost equation, was essential to continued authorization or development of water projects under the Water Conservation and Utilization Act of 1939.³²

The Project’s authorizing legislation makes clear that economic justification is not required. Rather, what is required is that the costs for the Project must be estimated and partitioned into that which “can be repaid by the water users” and other project beneficiaries. We support Reclamation’s seeking alternatives that emphasize lower costs, so that the repayment costs are affordable and “can be repaid by the water users.” We recommend that Reclamation consider a water delivery contract subscription process and method, based on cost estimates, to ascertain the extent of demand for surface water delivery as a better measure of economic justification.

We acknowledge that the Principles and Guidelines help to analyze and compare the various alternatives under consideration, and may guide the Secretary and President with respect to their actions anticipated by 16 U.S.C. 835 and 485h. But the benefit-cost factor, and the “economic justification” for which it serves as a proxy, is not a statutory determinant for Columbia Basin Project construction. The authorizing statute contains no provision mandating that project “feasibility” determinations be made on any basis other than engineering feasibility and sufficient repayment. Nor does it contain any provision mandating that the economic benefits of a project exceed the costs of the project, however measured.

VII. Benefit-Cost Analysis, DEIS Section 2.8

Reclamation should be cautious regarding the degree of its reliance on the outcome of benefit-cost analysis. Benefit-cost analysis should be an information-providing tool which is available to improve decision making. Its product, a numeric factor, should be understood as advisory information, not qualification/disqualification information. Alternatives under consideration may be comparatively viewed through benefit-cost analysis to have performed better or worse but none can be said to have succeeded or failed because the benefit-cost ratio does not attain a precise standard (e.g. 1.0).³³ Chapter II of the Principles and Guidelines, National Economic Development (NED) Procedures, recognizes this:

³² The Water Conservation and Utilization Act of August 11, 1939, 53 Stat. 1418; 16 U.S.C. 590y *et seq.*

³³ Reclamation should also consider that revision of the Principles and Guidelines, which set forth the procedures by which benefit-cost analysis is performed, is currently under consideration by the Council on Environmental Quality. The U.S. Council on Environmental Quality proposed “National Objectives, Principles and Standards for Water and Related Resources Implementation Studies” on December 3, 2009. The National Objectives and the supporting Planning Principles and Standards are proposed to be established pursuant to the Water Resources Planning Act of 1965 (Public Law 89-8), as amended (42 U.S.C.1962a-2) and to be consistent with Section 2031 of the Water Resources Development Act of 2007 (Public Law 110-114). They would supersede the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies dated March 10, 1983.

2.1.1. Purpose:

(b) This chapter provides procedures for evaluating NED effects of alternative plans.

(1) When an alternative procedure provides a more accurate estimate of a benefit, the alternative estimate may also be shown if the procedure is documented.

(2) Steps in a procedure may be abbreviated by reducing the extent of the analysis and amount of data collected where greater accuracy or detail is clearly not justified by the cost of the plan components being analyzed. The steps abbreviated and the reason for abbreviation should be documented.

NED effects evaluation, utilizing benefit-cost analysis, is clearly a comparative approach. Failure to proceed with the action alternatives based on the pretext of failure of the alternative to meet an arbitrary benefit-cost standard should be considered as administrative action inconsistent with Congress' prior statutory authorization.

Reclamation should reperform the benefit-cost analysis performed in the DETR and DEIS. Assumptions about the underlying values of the land and commodity assets involved in the Odessa area agricultural economy should be modified. The analysis should be repopulated with more current information reflecting changes in the agricultural commodity market since enactment of the Energy Policy Act of 2005. The Columbia Basin Project discount rate should be adopted for present and future value determinations. The same rate should be used to determine the costs of interest. The timing horizons of various decisional factors should be made uniform. The analysis' assumptions regarding consequential economic effects should be made more internally consistent. Computational accuracy should be improved.

A. Planning Rate

DEIS Table 2-13³⁴ summarizes the benefit-cost analysis of the proposed action alternatives. The benefit and cost totals included in the text are derived from DETR³⁵ Table NED_BCA1.—Results of NED BCA (based on current planning rate: 4.375%). A second table, DEIS Table 2-14,³⁶ derived from DETR Table NED_BCA2.—Results of NED BCA (based on current planning rate: 3.0%),³⁷ is also set forth. The DETR explains that “the results in table NED_BCA2 were generated using the planning rate in place when the Columbia Basin Project was first authorized (3.0 percent) and are presented for informational purposes only.” The DEIS explains: “The results in Table 2-14 were generated using the 3.0 percent planning rate originally authorized under the Columbia Basin Project Act of 1943. The use of the lower planning rate

³⁴ DEIS, p. 2-72.

³⁵ “Draft Economics Technical Report, Odessa Subarea Special Study, Columbia Basin Project, Washington,” U.S. Bureau of Reclamation, Technical Services Center, Denver, undated, (hereafter “DETR”), p. 4.

³⁶ DEIS, p. 2-73.

³⁷ DETR, p. 4.

results in somewhat higher costs, but considerably higher benefits, thereby resulting in higher net benefits and BCRs for all partial and full replacement alternatives.”

Section 2.1.3 of the Principles and Guidelines require that compounding and discounting be performed at the “applicable project discount rate.”

2.1.3 Calculating net NED benefits in average annual equivalent terms.

Net NED benefits of the plan are calculated in average annual equivalent terms. To perform this calculation, discount the benefit stream, deferred installation costs, and OM&R costs to the beginning of the period of analysis using the applicable project discount rate. Installation expenditures are brought forward to the end of the period of installation by charging compound interest at the project discount rate from the date the costs are incurred. Use the project discount rate to convert the present worth values to average annual equivalent terms. (Emphasis supplied.)³⁸

Section 6 of the Columbia Basin Project Act, as amended in 1943,³⁹ establishes the Project’s discount rate:

Sec. 835c-2. Authorization of appropriations; establishment of Columbia Basin Land Development Account

There are authorized to be appropriated, out of any money in the Treasury not otherwise appropriated, such moneys as may be necessary to carry out the provisions of this Act, to be reimbursable to the extent required by this Act. All revenues received in carrying out the provisions of section 4 hereof [16 U.S.C. 835c] shall be covered into the General Treasury as miscellaneous receipts. Amounts equal to appropriated funds requisitioned by the Secretary and made available for disbursement on the books of the Treasurer of the United States shall be debited in a special account in the Treasury, to be known as the Columbia Basin Land Development Account. Amounts equal to revenues covered into the General Treasury as miscellaneous receipts shall be credited in said special account. After such credits equal the amount of the debits with interest thereon at the rate of 3 per centum per annum from the respective dates of the debits, additional credits in said special account shall be made by the Secretary, in the manner determined by him, the basis of corresponding credits to the construction cost obligations of the district or districts entering into contracts for the repayment thereof. (Emphasis supplied.)

³⁸ See also, P&G Secs.1.7.1(h), 2.12.4(b).

³⁹ May 27, 1937, ch. 269, Sec. 6, as added Mar. 10, 1943, ch. 14, 57 Stat. 19; amended Pub. L. 87-728, Sec. 6(b), Oct. 1, 1962, 76 Stat. 679.

The DEIS refers to “the Federal 2009-2010 water project planning rate of 4.375%” but makes no reference to the authority under which that rate is promulgated. The “applicable project discount rate” in the case of the Columbia Basin Project is 3.0 %. Neither the authorizing statutes nor the 1983 Principles and Guidelines use the term “planning rate.”

The Principles and Guidelines use the terms “project discount rate” and “applicable discount rate,” suggesting that the rate will vary depending on the project under analysis, rather than any general commercial or governmental rate. The “applicable discount rate” in this case is 3 %. That rate is derived from the interest rate declared applicable by the Columbia Basin Project Act which would be incorporated within the amounts Columbia Basin Project Act irrigation districts would be required to pay the United States pursuant to their repayment contracts. The irrigation districts had secured statutory 3% project financing. As the 16 U.S.C. Sec. 485h reminds, Congress required that projects be evaluated on the repayment-cost approach. A “planning rate” approach which utilizes a different planning rate than the project financing rate disregards the repayment-cost requirement and frustrates implementation of Congress’ prior enactment.

The statute is still current. It has not been changed. Repayment of project works would still be financed at 3%. The financing paradigm of the project is one of reimbursement of project costs with a statutorily established rate of interest. Use of any other rate is inconsistent with the statute. There is no basis for any other “planning rate.”

Reclamation’s 1989 Draft Environmental Impact Statement, Continued Development of the Columbia Basin Project, Washington, recognized this distinction between the “Authorized Criteria” and the “Principles and Guidelines Procedures.”⁴⁰ The document explains that the higher discount rate used in that case was the “federal discount rate for FY 1989” and that this higher discount rate was used as “a sensitivity analysis” used “to determine how changes in the discount rate . . . would affect the results.” This approach recognized that the outcome of analysis might differ when different discount rates were used, but appropriately recognized that the “applicable project discount rate” is the “authorized criteria.” Any other interpretation causes the Principles and Guidelines Procedures to amend the statute without Congressional action.

B. Deterioration Rate of Groundwater Wells

The DEIS clearly states that groundwater wells will continue to deteriorate under the No Action Alternative,.

“Under the No-Action Alternative, irrigated agriculture in the Study Area that currently relies on groundwater would continue using that source of water. With continued dependence on groundwater, aquifers would further decline in quantity and quality. As groundwater declines, well yield and irrigation capability will progressively diminish in the Study Area.”⁴¹

⁴⁰ Draft Environmental Impact Statement, Continued Development of the Columbia Basin Project, Washington, U.S. Bureau of Reclamation, September 1989, Tables 1, 2, 3, pp. VIII-4-2, VIII-4-3, VIII-4-4.

⁴¹ DEIS, p. 2-15.

But the rate of deterioration is not quite so clear. The conflict between the Columbia Basin Groundwater Management Association (GWMA) conclusions and the DEIS methodology needs to be reconciled. GWMA concludes that any well may deteriorate from any stage to level 5 in any one season. The DEIS states that “If no action is taken, it is estimated that, at the current rates of decline, about 70 percent of the production wells in the Odessa Subarea would cease production within 10 years.”⁴² The DEIS also acknowledges the validity of GWMA’s deterioration rate predictions. “GWMA’s assessment of well decline is generally supported by observations of groundwater decline based on measured data obtained from known, reliable well records.”⁴³ And the DEIS apparently adopts the assumption, presented in DEIS Table 3-42⁴⁴ that 10% of the acreage in each well level are lost from each well level annually.

But the DETR’s analysis of the acreage irrigated in future years under the No Action Alternative indicates that only about 38% of the study area’s irrigated acreage will be served by wells that have fallen to Level 5 (62 % will have remained above level 5) by 2020.⁴⁵ The DETR further indicates that five years later, in 2025, about 50% of irrigated acres will be served by wells that have fallen to Level 5. 25 years after that, in 2050, the DETR estimates that about 85% of irrigated acreage will be served by wells that have fallen below Level 5.

Interpolating from DETR Table AgBen14, and assuming that irrigated acres is a sufficient proxy for production well productivity, the DETR indicates that 70 percent of the production wells in the Odessa Subarea would cease production in 2040 (30 years), rather than in 2020 (10 years). The “spreadsheet model” used to determine irrigated acreage deterioration is not presented. The rate of deterioration actually used in the DETR analysis is not shown. The rate of 10% presented in DEIS Table 2-3, Table 3-42 and DETR Table Agben8 is not large enough to accomplish a 70 % reduction in 10 years.

The DETR and DEIS underestimation of the effect of the No-Action Alternative apparently relies on a “second analysis method” utilized by “Reclamation’s Economic and Resource Planning Team⁴⁶ and a “spreadsheet model” for translating well deterioration rates into acreage farmed at various levels of pumping capacity.⁴⁷

⁴² DEIS., p. 1-8.

⁴³ DEIS, p. 2-19.

⁴⁴ And DETR Table AgBen8—Well levels, acres served by each well level, and rate of decline by well level.

⁴⁵ DETR, Table AgBen14.—No Action Alternative groundwater irrigated acres under the without project condition. It is unclear what effect occurs because the of DETR’s combination of pump levels 3 and 4, precluding application of variable standard declination rates measured against fixed dates of full aquifer supply failure. Levels 3 and 4 do have different characteristics. See DEIS, p. 2-16 “GWMA Status Levels: Describing Well Performance in the Odessa Subarea.”

⁴⁶ See DEIS, p. 4-48, Table 4-17, Estimated Percentage Wells Going Out of Commission under the No-Action Alternative, Based on Groundwater Decline Rates, Pumping, and Stated Assumptions. The “Assumptions” are not provided in the accompanying text.

⁴⁷ DETR, p. 23, Section 1. 2.1.1.3.7 Finding the Change in Irrigated Acres.

“Then the spreadsheet model, based on assumptions about decreasing well dependability, estimated the reduced number of groundwater irrigated acres annually for the without project conditions. As acres transitioned from one well level to another, a change in the crop mix occurred along with a resultant change in residual net farm income. As wells became completely unusable, acres were placed into the well level 5 category and grew only dryland wheat in a wheat/fallow rotation.”

The assumptions relied upon in the “spreadsheet model” should be presented and discussed with GWMA. The spreadsheet model should be published and reviewed prior to its use in the final EIS. DETR Table AgBen8 should be redrafted following reconciliation of the GWMA and DETR/DEIS conclusions.

The consequence of no action to Adams County is loss of agricultural production business opportunity and significant negative economic impact. Presuming that impact occurs sooner than anticipated by the DETR and DEIS, the economic value of the impact, as reflected in Section 4.15 of the DEIS, will be greater.

C. Total NED Benefits of the Action Alternatives

The DEIS’ report of the benefit costs analysis sorts the benefits into three categories: a) agricultural benefits, b) other direct benefits—municipal, and c) other direct benefits—industrial. Another benefit category, “economic losses avoided” should be added.

1. Agricultural Benefits

Section 2.3.5, of the 1983 Principles and Guidelines, “Evaluation Procedure: Crops” describes the process by which agricultural benefits should be valued:

The Principles and Guidelines suggest utilizing either the “farm budget analysis” or “land value analysis” “to estimate crop production benefits on lands where there would be a change in cropping pattern.”⁴⁸ The DEIS chooses “farm budget analysis.”

(c) Step 3. Select evaluation method for estimating intensification benefits. For land on which the cropping pattern would change, select either farm budget analysis or land value analysis as the method for measuring intensification benefits. If land value analysis is selected, go to Step 9. If farm budget analysis is selected, proceed with Step 4. (Emphasis supplied.)

The “farm budget analysis” chosen by the DETR and DEIS has a number of problems, particularly with the data upon which it relies. Agricultural benefits are calculated utilizing data from the Census of Agriculture and the National Agricultural Statistic Service (NASS) for the

⁴⁸ Section 2.3.5 (c).

State of Washington. Section 1.2.1.1.2.1 of the DETR finds that the NASS estimated yield for wheat (101.5 bushels per acre) was too low and that the GWMA's and WSU Farm Business Management Report EB2029E estimated yield for wheat (125 bushels per acre) was more correct. The DETR nevertheless later uses the NASS estimate in the "without project" farm summary analysis (Table AgBen10, DETR p. 17) and the GWMA/WSUFBM estimate in the "with project" farm summary analysis (Table AgBen 12, DETR p. 19). The same yield data should be used in both the "without project" and "with project" analyses.⁴⁹ GWMA recommends that the yield of 125 bushels is the most accurate reflection of current agricultural production on irrigated acreage. No analysis is performed of the effect of groundwater well deterioration on crop yield.⁵⁰

The DETR estimates total harvested areas of three crop categories (wheat, potatoes, and mixed crops) in proportions determined by extrapolation from GWMA data for the years 2001-2005, dismissing the NASS primary irrigated crop acreages data for 2004-2008⁵¹ on the basis that it was less "appropriate." The category "mixed crops" includes "corn, alfalfa, conservation reserve program acres, peas, onions, dry beans, and numerous other crops grown in the study area."⁵²

Current crop acreage distributions should be used in this analysis of farm budgets. Data derived from years prior to Congress' enactment of the Energy Policy Act of 2005⁵³ should not be relied upon, as they do not take into account the effect of that Act's incentivizing the creation of energy from agricultural products (including crops within the definition of "mixed crops"), thereby establishing a significant new demand for those products. Higher prices consequent of additional demand cause crop mix to change so as to seek greater placement in higher priced markets. Any acreage distribution prior to the development of cellulosic ethanol (or similar products) as an energy source should be set aside, particularly for the purpose of analyzing economic effects occurring 10 or more years into the future.

The DETR uses "normalized" prices⁵⁴ for crops utilizing data from the USDA Economic Research Service (ERS) and NASS. As the Water Resources Planning Act of 1965⁵⁵ does not use the word "normalize," and as the 1983 Principles and Guidelines do not define the word

⁴⁹ Compare DEIS Table 3.38, DETR Table AgBen 4 (irrigated wheat yield = 101.5 bushels), DETR Table AgBen 10 (irrigated wheat yield = 101 bushels if farming in well levels 1 and 2), and DETR Table AgBen12 (irrigated wheat yield = 125 bushels if farming in pumping level 1, = 101 bushels if farming in pumping level 2, and = 125 bushels if farming in pumping levels 3-4).

⁵⁰ DETR Table AgBen 11.—Well level 5 representative farm summary uses "irrigated acres" as a divider to determine net farm incomes per acre. DETR Tables AgBen10 and AgBen12 use "farm size" as a divider.

⁵¹ Table AgBen3, DETR p. 10.

⁵² DETR, p. 13.

⁵³ Pub. L. 109-58, August 8, 2005.

⁵⁴ Apparently relying on section 2.3.3 (b) of the 1983 Principles and Guidelines.

⁵⁵ 42 U.S.C. §§ 1962a-1962a-4

“normalize,” the conventional definition must pertain. Normalization involves the isolation of statistical error in repeated measured data. No information is provided about how wheat prices were “normalized.” Congress’ adoption of the Energy Policy Act of 2005 had the effect of making data from years before 2005 anomalous and not statistically useful for prediction of future markets. That data should be not be utilized to determine normalized prices.

The DETR uses three-year average prices in the case of potatoes⁵⁶ on the basis that potatoes are not “basic crops.”⁵⁷ DEIS Table 3-39 and DETR Table AgBen5.—Normalized prices received by crop reflect the crop price multiplier which is used in the farm summary analysis: wheat \$4.98/bushel; potatoes \$6.23/Cwt, and mixed crops \$0.2812/lb.

A normalized wheat price of \$4.98/bushel is too low. It does not take into account more recent year prices, nor the effect of the Energy Policy Act of 2005. The ERS’ Wheat Yearbook Table O1⁵⁸ shows the “weighted average farm price” for wheat at \$6.48 for growing year 2007/2008, \$6.78 for growing year 2008/2009, and \$4.87 for growing year 2009/2010. The three year average of these years’ prices is \$6.04. \$5.50 to \$6.00/bushel would be a very reasonable average wheat price for the last five years.

The three-year average potato price of 6.23/Cwt is also too low. The ERS’ Potato Tables,⁵⁹ Table P-4—Potatoes: Grower prices in major producing states, monthly 2008/09-2010/11, shows the growers’ price for potatoes at \$7.45 for the 2008/2009 growing year, and \$7.60 for the 2009-2010 growing year. The two year average of these years’ prices is \$7.53. \$7.00/Cwt would be a very reasonable average potato price for the last five years. Consideration should be given to the fact that potatoes grown in the Odessa region of the Columbia Basin Project can withstand significant storage times without spoilage, giving them a pricing premium in sale to producers who desire to deliver potato products (frozen French fries) to food retailers throughout the year notwithstanding harvest dates.

The DETR provides no information describing the product mix, or the percentage of each product group mixed in the “mixed crop” group. Nor does it provide information describing whether the price determined is a “normalized” price or a three year average price. DEIS Table 3-39 and DETR Table AgBen5 suggest that the “mixed crops” price was “normalized” at \$.2812/lb. (DETR Tables AgBen10, and AgBen 12, use a 1/100x multiplier for yield units and a 100 x multiplier for price received for mixed crops). The method for determination of the price of “mixed crops” should be identified and care given to evaluating the components of those

⁵⁶ DETR, p. 11.

⁵⁷ Apparently deferring to the list of crops contained in section 2.3.2 (b) of the 1983 Principles and Guidelines, notwithstanding the reference at p. 11 of the DETR to the Water Resources Planning Act of 1965 (42 U.S.C. §§ 1962a-1962a-4). Other crops may be treated as “basic crops”, sections 2.3.2 (b) and 2.3.5 (d). The DETR does not evidence whether the analysis presented in section 2.3.5 (d) was used.

⁵⁸ <http://www.ers.usda.gov/Data/Wheat/YBtable18.asp>

⁵⁹ <http://www.ers.usda.gov/Briefing/Potatoes/data.htm>

mixed crops which are sensitive to the demand for cellulosic fiber (particularly if corn is any significant component of mixed crops) as well as food product.

The DETR's crop allocation per farm in DETR Table AgBen10 and Table AgBen12 is fixed notwithstanding the variability of price/cost efficiency between crops in different production years.⁶⁰ The pumping level 1 scenario in DETR Table AgBen10 reflects a reasonable potato/wheat rotation (350/1400, 1/4). The pumping level 2 scenario, however, does not reflect a reasonable potato/wheat rotation (646/1400, 1/2). The pumping level 2 scenario thus assumes a larger potato income and a larger total income than might be realized under an actual rotational farming scenario. It is unclear why a more aggressive rotation is possible in the pumping level 2 scenario when the well reliability is less. A standard appraisal assumption used by land appraisers for Columbia Basin Project properties is a potato/nonpotato rotation of 1/5.

DETR Table AgBen10 does not reflect reality. The Table produces negative residual farm income results for some well level cases. Agricultural acreage will not be farmed if negative residual farm income is the consequence. The model used to formulate Table AgBen10, and the assumptions upon which the model is based, should be calibrated to actual farming operation on properties served by groundwater and surface water. The DETR reports that the "return to management in a benefit budget is calculated as 6 percent of variable cost on a benefit study."⁶¹ Yet none of the entries for "returns to farmer"⁶² in Tables AgBen10, AgBen11 and AgBen12 are 6 % of "variable costs," nor are they the same percentage of "variable costs."⁶³ Also, the farm budgets presume that a fixed "return to management" would be taken by farm owners notwithstanding whether a negative net farm income would be incurred by doing so. While this may be necessary in the hypothetical modeling of farm budgets, a more realistic approach would be to limit losses at zero and commensurately reduce "return to management." Negative net farm income" cannot be sustained unless through multiple year net income averaging, or through farm credit financing. If financing is presumed, the cost of financing should be introduced into variable costs.

The consequence of this model fallacy is illustrated in DETR Table AgBen15.—No Action Alternative residual net farm incomes by well level under a without project condition. All total residual net farm income levels in this table are negative. No farming would be conducted if this would be the outcome. A correct model should be developed that projects the current condition

⁶⁰ This preclusion from market adaptation is exacerbated by the 104 year application of the consequent Residual Net Farm Income analysis presented in DETR Tables AgBen18 and AgBen21, pp. 33, 38.

⁶¹ DETR, pp. 15, 23.

⁶² Assuming that "return to management" and "return to farmer" mean the same thing. "Return to owner" would be the appropriate factor if the farming unit were leased. This would be the represented in the capitalization rate determined by the relationship of lease income to the owner's investment value of the farmed land.

⁶³ 1983 Principles and Guidelines, Section 2.3.3 (ii) Value purchased inputs at current market prices. Compute interest at the project discount rate. Value all labor, whether operator, family, or hired, at prevailing farm labor rates. Estimate management cost on the basis of the type of farming operation. The estimate normally is expected to be at least six percent of the variable production cost (the cost of equipment ownership and operation, production materials and labor, but excluding the cost of land and added capital improvements).

of farming operations on the properties under consideration and taking into account deterioration of groundwater well capabilities.

The sensitivity of pricing and farm cost data is particularly significant in this model because of the uncertainty of well-deterioration assumptions, the multiplier effect of the long scale of the analysis⁶⁴ and the effects of compounding/discounting over such a long period. A shorter period would be less subject to distortion by compounding and discounting, and less vulnerable to inaccuracy due to changing conditions, e.g., variability of world agricultural markets, variability of demand for food based on population growth or climate change, variability of U.S. policy regarding domestic energy independence, enhancements in botanical engineering.

2. Other Direct Benefits—Municipal

We agree with Reclamation that the problem of groundwater supply sufficiency is equally a problem for municipal communities:

“Data available for municipal and industrial wells shows that most of these wells exhibit general trends of groundwater level declines. However, most municipal and industrial users are outside of areas experiencing the greatest groundwater level declines. Even so, groundwater levels in municipal and industrial wells would continue to decline under the No Action Alternative, which would result in increased pumping costs and the eventual need to replace pumps and deepen wells.”⁶⁵

“Although domestic wells are typically completed in the upper aquifer, these wells can be impacted by water level declines in the deeper aquifer. This is because the shallow aquifer and deeper aquifer are hydraulically connected by open boreholes and vertical fracturing, which allows shallow water to drain into the deeper aquifer. Therefore, domestic wells are likely to continue to be impacted under the No Action Alternative, as the deeper groundwater declines.”⁶⁶

“The ultimate long-term significant impact of the No Action Alternative would be groundwater declining to levels too deep to pump economically, groundwater with poor quality that cannot be used or requires quality management, and the eventual depletion of the aquifers.”⁶⁷

⁶⁴ Residual net farm income calculations range over 104 years (2019-2125). See: DETR Table AgBen 15.—No Action Alternative residual net farm incomes by well level under a without project condition; DETR Table AGBen 18.—Partial replacement alternative: Residual net farm incomes by well level under a with project condition; DETR Table AGBen20.—Full replacement alternative: Groundwater irrigated acres under a with project condition; DETR Table AgBen21.—Full replacement alternative: Residual net farm incomes by well level under a with project condition.

⁶⁵ DEIS, p. 4-49.

⁶⁶ DEIS, p. 4-49.

⁶⁷ DEIS, p. 4-49.

These conclusions dictate significant concerns for municipal and county public service providers. The DEIS section 4.18⁶⁸ acknowledges the potential long term impacts of the No Action Alternative to municipal and domestic populations served by providers of public services and utilities:

Implementation of the No Action Alternative would result in the continuation of current ongoing activities and programs, so groundwater availability would continue to decline for commercial, municipal, and industrial water users. This decline could result in the need to drill deeper wells, thus increasing drilling and pumping costs to supply water. Larger pumps for deeper wells require more energy, although some wells would no longer be used.

Drilling and pumping costs could, however, increase to the point where farmers, landowners, residents, or business owners cannot afford the water. This could result in changes in land use and impacts on existing businesses. In addition, if the quality of the water declines over time (as is expected with this alternative), this could also result in changes in land use, impacts on existing businesses, and health risks to human populations relying on the water.

The loss of irrigated agriculture associated with the No Action Alternative could impact businesses and people that are linked to the agricultural industry, such as farm workers, food processing facilities, seed pesticide companies, and trucking companies. This could result in a decreased population base to support law enforcement, fire protection, and medical services, resulting in layoffs of police, fire and police stations, or closure of some medical facilities in or near the Study Area. Closure of local facilities would increase response times during emergencies.⁶⁹

But the DEIS declines to determine the “significance” of these impacts:

It is difficult to predict exactly when or how these changes might occur, so the significance of this potential impact cannot be determined at this time.⁷⁰

The DEIS should fully evaluate the social impact of inadequate water supply to existing communities. We recommend a much more robust consideration of the consequences of groundwater decline upon populations served by municipal and domestic groundwater supplies. DEIS Table 4-94⁷¹ defines the criteria for “significance” of disruption of services or utilities for

⁶⁸ DEIS, p. 4-240.

⁶⁹ DEIS, p. 4-242.

⁷⁰ DEIS, p. 4-242.

⁷¹ DEIS, p. 2-241.

existing residents and landowners only in terms of short term construction impacts.⁷² Criteria for determination of significance should be established for long term impacts like those presented above as well. Impacts on the users of public services should be considered along with the impacts on the suppliers of public services. The costs of avoidance of those impacts should be analyzed so as to more completely describe the municipal benefits of the action alternatives.

The DETR only discusses municipal benefits related to the action alternatives from limited the perspective of potential municipal pumping cost savings based on the amount of agricultural acreage estimated to terminate groundwater withdrawals.⁷³ A more comprehensive analysis should be undertaken. The DETR should also evaluate the economic and public health impacts on municipalities and proximate private dwellings relying on domestic groundwater wells from the possible failure of those wells.

The mitigation of municipal cost through decrease in agricultural consumption approach used is too limited. “The level of benefit to municipal water users depends on what is expected to happen under the No Action Alternative.” DETR, p. 41. The study presumes that “. . . under the No Action Alternative, irrigators will move to less water intensive crops and ultimately convert to dryland agriculture.” While this statement is theoretically correct, it fails to acknowledge that those economic choices will only be made when the underground water supply becomes exhausted. The DEIS acknowledges that the groundwater supply is already approximately 75 % consumed, and that it is a finite supply. If agriculture exhausts the supply, then it will not be available for municipal or domestic use. The farm budget analysis used to evaluate agricultural benefits anticipates over 100 years of economic activity. The supply has become 75% exhausted within 50 years. The study should predict whether the groundwater supply will be adequate to sustain municipalities and domestic wells for the same 100 years. And the study should predict the additional pumping costs which municipalities and domestic well owners will have to pay if they must follow groundwater down with new wells.

The DETR determines that the municipal benefits for the action alternatives, when compared to the No Action Alternative, were relatively significant, premised on assumptions about the speed that agricultural reliance on groundwater would diminish at about the same rate regardless whether action was or was not taken. But the DETR does not determine whether the municipal and domestic groundwater supply will remain adequate.

Changes in municipal population, economic viability and growth should be anticipated as well when anticipating municipal and domestic water demand. The DETR projects population growth in the affected municipalities based on growth in the county in which each is situated. DETR Table NED_MUNI4, relying on Washington Office of Financial Management projections

⁷² DEIS, p. 4-277. DEIS Sections 4.29.1 Surface Water Quantity, 4.29.2 Groundwater, and 4.29.3 Surface Water Quantity also address only construction period impacts.

⁷³ DETR, pp. 40-52.

twenty years ahead (2000-2030).⁷⁴ Annual water use is estimated from population. The economic analysis of the agricultural benefits is projected through 100 years. The DETR estimates the pumping costs for 105 years (2019-2125) of the No Action Alternative and discounts those costs back to 2025. It does the same with the Partial Replacement and Full Replacement alternatives. The difference, a purported “benefit” of \$5.1 million and \$8.1 million, seem like a marginal conclusion, given the large number of assumptions taken in the calculus of the results and the total gross cost of pumping water from significant depth.

The DETR should also address the uncertainty costs and investment costs for municipalities. Municipal public works planning is uncertain because of uncertain predictions of well failure. Public works investment in well deepening will be required in advance of failure in order to avoid water supply and health risks. Waiting to see how fast agricultural water users terminate their groundwater use will not protect public health if municipal or domestic groundwater wells go dry.

The Bureau of Reclamation has authority under the Columbia Basin Project Act and Reclamation Project Act of 1939 to construct projects for municipal water supply.⁷⁵ The DETR and DEIS should consider both the costs and benefits of the extension of surface water supplies to the affected towns. Direct service could be provided to Warden from East Low Canal. Service could be extended to Connell from Turnout ELG89G past irrigation service (approx 2 miles). Service could be extended to Odessa, from Black Rock Coulee Pumping Plant 7R past irrigation on to Hiway 21 (approx. 7 miles). A new service line could be extended due west from the East Low Canal to Othello (approx. 7 miles). A new service line could be extended due west to Moses Lake from the East Low Canal to Moses Lake (approx. 5 miles each). Partial year water availability, water quality and treatment costs would be important considerations.

The DETR and DEIS should also consider both the costs and benefits of reverse use of existing production wells so as to inject water into the ground at depth in order to maintain groundwater levels for municipal wells.

3. Other Direct Benefits—Industrial

We agree with Reclamation that the problem of groundwater supply sufficiency is equally a problem for industrial water users:

“Aquifers in the Odessa Subarea also supply commercial, domestic, municipal and industrial users in and nearby the Study Area. For example, the cities of Moses Lake and Ritzville, the towns of Hatton and Wilson Creek, and numerous food processing and other agriculture-related businesses in Connell, Moses Lake, Othello, and Warden rely on this groundwater.”

⁷⁴ Short population growth analysis fails to consider the influence of changing demographics or Western Washington state urban (or other urban area) outmigration. Both central California and eastern Oregon are experiencing growth of towns and suburbs due to outmigration from coastal plain cities.

⁷⁵ 16 U.S.C. Sec. 485h (a)(5)

“Under the No Action Alternative, irrigation groundwater would not be replaced with surface water, aquifers would continue to decline and all current commercial, domestic, municipal and industrial users would be affected in and near the Study Area.” DEIS, p. 2-20. (Emphasis supplied.)

The DEIS addresses only the direct effect of reduced groundwater availability on industrial water users. The DEIS should also address the effect of reduced irrigated land agricultural production and more dryland agricultural production on the agricultural processing industry in near the analysis area. Data should be collected from major industrial concerns, including McCains (potato products), Simplot (potato products), Harvest Fresh (fresh potatoes), Columbia Cold Storage (storage of frozen food products), SVZ-U.S.A. (juice), Cenex Feed-Land of Lakes (feed), Taggares Alfalfa (dried alfalfa and allied products), Simplot (fertilizer and chemicals), Ritzville Warehouse (grain), Union Elevator (grain), Consolidated Grange Supply (fertilizer, fuel and farm supplies), National Foods (eggs), regarding changes they would anticipate if the No Action or Partial Replacement alternatives were selected.

4. Other Direct Benefits—Economic Losses Avoided

Economic losses avoided by implementation of a project should be considered as “other direct benefits,”⁷⁶ just as costs caused by implementation of a project can be considered as “other direct costs.”⁷⁷ DEIS section 4.5 addresses Irrigated Agriculture and Socioeconomics.⁷⁸ The DEIS identifies, without source, that a \$1.6 billion total gross farm economy exists in the four-county analysis area. The DEIS concludes that the partial replacement alternatives add \$36,509,910 in economic value over and above the \$42,738,724 economic value provided by continued reliance on groundwater wells (the No Action Alternative), and that the full replacement alternatives add \$65,728,653 in economic value over and above the \$42,738,724 economic value provided by continued reliance on groundwater wells.⁷⁹ Viewed conversely, the two sums, whose numeric values are arguably incorrect in any case,⁸⁰ are economic losses avoided by the action alternatives. These should be included as a portion of the Total NED Benefits. The alternative is that they should be costs attributable to the No Action Alternative. But inasmuch as the benefit-cost analysis begins with the proposition that the No Action Alternative has zero benefits or costs, these benefits should be included in the benefits calculation.

⁷⁶ Principles and Guidelines, section 2.10.4.

⁷⁷ Principles and Guidelines, section 2.12.17.

⁷⁸ DEIS, pp. 4-199- 4-225.

⁷⁹ DEIS Table 4-62, p. 4-200.

⁸⁰ These totals are stated in terms of gross farm income (which is computationally dependent on values for crop yield, crop price and residual NFI per acre, as well as well deterioration ratios, all of which need to be restudied) which does not take into account the multiplier effect of gross farm income on other industrial and service economies.

Although it may be argued that these economic losses are only regional in nature, and therefore should not be included in the national analysis, these economic losses avoided are just as “national” as are the hydropower costs discussed in section D 4 below.

D. Total NED Costs of the Action Alternatives

The DEIS’ benefit cost analysis sorts costs into five categories: a) canal and reservoir construction costs and IDC (“interest during construction”) costs; b) canal and reservoir OMR&P costs; c) drainage system construction and IDC costs; d) drainage system OMR&P costs; and e) lost hydropower benefits.

1. Canal and Reservoir Construction and IDC Costs

The canal and reservoir system proposed to be constructed and described in the DEIS is apparently sized to deliver 3 acre feet of surface water per year for each acre of farmland currently irrigated by groundwater. The DEIS does not report any study of the exact amount of groundwater currently being applied on acres that would be served with surface water. The water use efficiency currently accomplished by groundwater irrigation systems more than likely results in better efficiency than 3 acre feet per acre. Reclamation should determine that the facilities proposed for either the partial or full replacement alternatives are not oversized beyond the needs of current groundwater irrigators. Design choices should integrate both the need to provide replacement surface water to existing groundwater users and the need to avoid interference with potential completion of the Columbia Basin Project as originally authorized. It is not necessary to construct capacity to deliver surface water to all of the uncompleted Project lands at this time.

The DEIS accepts GWMA’s estimate that some acreage in the groundwater irrigated acreage will remain in Level 1 status after the project is completed, probably because those wells are served through leakage or lateral underflow of water from proximate existing canals or reservoirs. The DEIS also identifies that 16,864 acres are already served with surface water by direct pumping from the East Low Canal.⁸¹ Delivery of surface water to those acres would duplicate existing water supply. The project should be sized so as to not deliver water to these properties, thereby reducing cost.

Both partial and full replacement alternatives include construction of two components: a water supply system and a water delivery system. The delivery system for the partial replacement

⁸¹ “For existing water service contracts in the Odessa Subarea, contract holders pump directly out of the East Low Canal at 34 locations. This condition, characterized by individual, unscheduled starts and stops of pumps, decreases system efficiency and can adversely affect ECBID’s ability to meet delivery commitments downstream. The No Action Alternative would not address this condition.” DEIS, p. 2-20.

“As part of these [partial groundwater irrigation replacement alternatives] the 16,864 acres of existing water service contracts that pump out of the East Low Canal at 34 locations would be incorporated into the delivery system.” DEIS, p. 2-21

alternative is further segmented into an existing East Low Canal enlargement project,⁸² an East Low Canal extension project,⁸³ and a pressurized pipeline distribution project.⁸⁴ The delivery system for the full replacement alternative (the components of which would be in addition to the partial replacement alternative) is further segmented into a new East High Canal construction project, a new Black Rock Branch Canal construction project, a Black Rock Coulee Reregulating Reservoir construction project, and a pressurized pipeline distribution project.⁸⁵

The benefit-cost analysis does not evaluate each of these segments independently. The costs of each should be independently determined so as to permit evaluation of those portions of the project that may be better constructed through non-federal (private or other governmental) projects. This would allow establishment of the benefit-cost ratio with or without a particular segment.

The pressurized pipeline distribution component of both the partial and full replacement alternatives is, for example, now integrally contained but could be developed as an independent non-federal projects. It does not appear from the DEIS that Reclamation has conducted any study of non-federal interest in construction of any component of the project. Construction of a pressurized pipeline distribution system is well within the capacity of non-federal parties, who would likely utilize the same or similar engineering and construction contractors as would federal construction. Integration of federal and non-federal systems is more possible today than when prior construction of Columbia Basin Project elements occurred because of more modern supervisory control and data acquisition (SCADA) systems. Removal of the pressurized pipeline distribution component from the project would reduce project costs without reducing project benefits, thereby improving the benefit-cost equation.

The DEIS describes easement requirements for the several components of the project. Easement widths range from 600 ft. to 1200 ft, while canal cross sections indicate widened canal width at approximately 100 ft. DEIS, p. 2-27. A 600 foot easement for the East Low Canal extension is not necessary as the land involved has less relief than most of the existing East Low Canal. The 161.3 miles of pressurized distribution pipeline, DEIS, Page 2-28, does not require a 200 foot wide easement. Pressurized pipeline can be installed within a 60 foot easement/right of way without problems. Pressure pipelines can follow existing ground contours. The DEIS should reduce the size of proposed easements and explore the availability of existing public rights of way.

⁸² Enlarge capacity of 43.3 miles of East Low Canal south of I-90 including adding a second barrel to all five existing siphons.

⁸³ Extend East Low Canal about 2.1 miles at southern end.

⁸⁴ 161 miles of buried pipeline, 200 foot wide easement, 6 canal-side pumping plants, 5 relift pumping plants, one gravity feed turnout.

⁸⁵ 187.3 miles of buried pipeline, 200 foot easement, 3 canal-side pumping plants on East High Canal north of Black Rock Coulee Reregulating Reservoir, 5 canal-side pumping plants on East High Canal south of BRCR Reservoir, 7 canal-side pumping plants canal-side pumping plants along Black Rock Branch Canal, 3 relift pumping plants, 2 gravity feed turnouts.

The DEIS states that a portion of these wider easements are necessary for “fish and wildlife purposes.” No explanation is provided for these “purposes.” Reclamation should evaluate whether such broad easement acquisition is required, as fish and wildlife do not know the legal status of the land over which they migrate. Wildlife migration in agricultural areas is not impeded to the same extent as wildlife migration in urban or more developed areas.

Canal-side pumping plants and re-lift pumping plants are described in the DEIS, p. 2-28, as requiring 7 acres each. No more than 3.5 acres should be required. Seven acres is more than 500 feet on each side of a square. This is more land than is required for pumping plants.

The DEIS states that there is an O&M facility.⁸⁶ But, DEIS section 2.2.16 Operation and Maintenance Facilities states that O&M facilities have been eliminated. If they have been eliminated, the costs related to an O&M facility should be eliminated from the cost analysis. If they have not eliminated, an O&M facility should be eliminated, as existing maintenance facilities can be used or expanded at their present locations.

DEIS Section 2.7 presents information contained in the “Draft Engineering Technical Odessa Subarea Special Study.”⁸⁷ The contingencies used in Chapter 6 of the Draft Engineering Technical Report are artificially high. It does not appear that the Draft Report conducted any project-specific appraisal of the risk assumptions upon which non-field cost contingencies should be based. Reclamation should re-evaluate the risk assumptions that are the basis for the non-field cost contingencies used. Reclamation should take into account that the projects under consideration are normal Reclamation construction projects and that they involve merely an extension of an existing operating portion of the Columbia Basin Project.

Design Contingencies:⁸⁸ The contingency rate recommended by the “Reclamation Cost Estimating Handbook guidelines” is 2% to 15%. The DETOSSS uses the rate of about 11% which is toward the high end. In the opinion of the Adams County Engineer, a 5% contingency should cover the variables. This project, and particularly alternatives 2A and 2B, are straightforward projects including only items that are standard Reclamation type projects, i.e., pumping plants, canal widening, a short canal extension, pressure pipelines and siphons. The complexity of these items does not require a large contingency.

Construction Contingencies:⁸⁹ The contingency rate suggested by the “Reclamation Cost Estimating Handbook guidelines” is 20%. The amount used is about 24%. In the opinion of the Adams County Engineer, a 15% construction contingency is more than enough to cover even extremely complex projects. This project, and particularly alternatives 2A and 2B, are straightforward projects including only items that are standard Reclamation type projects, i.e.,

⁸⁶ DEIS, p. 2-31.

⁸⁷ Hereafter, “DETOSSS.”

⁸⁸ DETOSSS, Section 6.1 Field Cost Estimates.

⁸⁹ DETOSSS, Section 6.1 Field Cost Estimates.

pumping plants, canal widening, a short canal extension, pressure pipelines and siphons. This project area includes soils and subsurface conditions that are well known, as they are adjacent and partially included in the existing completed Columbia Basin Project. There is little uncertainty. The lack of complexity of the project under consideration does not require a large contingency, nor a contingency larger than the one suggested by the Cost Estimating Handbook guidelines.

Studies, Investigations, and Design Data Collection and Engineering Design:⁹⁰ Noncontract costs for this project, particularly alternatives 2A and 2B, which have many elements that are already known from the previous construction of the Columbia Basin Project and are repetitive in nature should be in the range of 10% of the Total Field Cost.

Other Cost:⁹¹ Other costs for a project like this should not exceed 5%.of Total Field Cost.

The totals for construction costs and interest during construction set forth in DEIS Table 2-12, appear to have been derived from Table ES-2 in the DF-LSSR.⁹² The totals are different than those totals listed in DETR Table NED_BCA1, DF-LSSR Table 5-11, p. 29, and DF-LSSR Table 5-12, p. 5.31. No explanation is given. Both tables show IDC costs.

“Interest during construction” is compounded, using the “planning rate of 4.375 percent.”⁹³ DETR, p. 53. The statutorily defined interest rate for the Columbia Basin Project is 3.0 percent. DF-LSSR Table 5-13, DETR Table NED_BCA2, and DEIS Table 2-14 should be the basis for decision making regarding the action alternatives. Tables based on the rate of 4.375 percent may be presented as informative, but should not be used as a basis upon which to analyze or compare alternatives.

2. Canal and Reservoir OMR&P

3. Drainage Costs

The benefit-cost analysis considers the costs of construction of drainage, including IDC, and the cost of drainage system OMR&P.⁹⁴ However, no drainage system for the acreage newly watered by the Columbia River surface water supply may need to be constructed. In the alternative, a more limited or smaller scale drainage system may be sufficient. Under the action alternatives, the same acreage now watered by groundwater through efficient pivot irrigation systems will be watered by surface water through efficient pivot irrigation systems. No

⁹⁰ DETOSSS, Section 6.2 Noncontract Costs.

⁹¹ DETOSSS, Section 6.2 Noncontract Costs.

⁹² Draft Feasibility-Level Special Study Report, Odessa Subarea Special Study, U.S. Bureau of Reclamation, October 2010, p. ix, hereafter “DF-LSSR”.

⁹³ See discussion above at VI, A.

⁹⁴ DETR, Tables NED_BCA1, NED_BCA2, pp. 4, 5.

additional amount of water will be applied to the acreage. There is no rill irrigation as commonly used when the Columbia Basin Project was first designed and used. There is no current wastewater. There is no current wastewater drainage system for the groundwater-irrigated properties. The DEIS acknowledges this:

“[The] estimated costs [for irrigation water drainage facilities] are based on 20- to 30-year old CBP design assumptions, which included new irrigation development, and were based on platted, concentrated farms using gravity flow and rill irrigation. These assumptions are no longer valid, because the current farms in the Study area are spaced widely and use pressurized delivery systems. Although project design has not progressed to the point of addressing irrigation water drainage in detail, estimates of drainage system costs using the original CBP assumptions are included to ensure complete and conservative cost estimates.”
DEIS, p. 2-67, note 3.

It would be fiscally wasteful to construct a wastewater drainage system if it is not needed. If any waste water is created after surface water has been delivered to the currently irrigated acreage, it should be impounded and permitted to percolate down within the soils as groundwater aquifer recharge.

The Draft Feasibility-Level Engineering Report on page 2-65 assigns a value of 33% costs taken from previous 1966-1972 costs and then are used for alternative #2 drainage costs. This number should be zero. The Adams County engineer for over 10 years has seen no surface or subsurface drainage issues on or near the relevant properties that would require remediation.

The fatal flaw with “Monte Carlo” system of cost analysis is that the most probable low is zero. Since zero is the lowest you can go, the most probable has to be above that even if logically it should be zero. Zero is a troubling number. Care should be exercised in any sort of analysis since it always produces zero in math products that may be in your equation.

4. Lost Hydroelectric Generation Benefits

DETR Section 1.2.2.2.1 and DEIS Section 4.17 presume that the diversion of Columbia River surface water under the action alternatives causes reduction in hydroelectric generation in the lower Columbia River. The effect is based upon the BPA’s calculations. “BPA multiplied the changes in average monthly hydropower generation by Aurora model based on average monthly power values to estimate losses in average annual hydropower benefits.” DETR, p. 71.

a. Inconsistency with the Authorizing Statute

The DEIS’ inclusion of lost hydropower benefits as a cost, when determining whether to pursue the action alternatives, is inconsistent with the authorizing statute. Reclamation apparently recognized this in 1989, when it excluded “downstream generation losses” from the “authorized criteria,” and used them only as “sensitivity analysis.”⁹⁵ Congress’ 1943 reauthorization of the

⁹⁵ Reclamation’s 1989 Draft Environmental Impact Statement, Continued Development of the Columbia Basin Project, Washington, recognized that “downstream generation losses” were not part of the “Authorized Criteria. The

Columbia Basin Project made the Project subject to the Reclamation Act of 1939.⁹⁶ Section 9 of that Act authorized the Secretary of Interior to investigate and construct projects within allocated cost groups: irrigation water users, power users, and municipal water users. 16 U.S.C. 485h⁹⁷ provides:

No expenditures for the construction of any new project, new division of a project, or new supplemental works on a project shall be made, nor shall estimates be submitted therefor, by the Secretary until after he has made an investigation thereof and has submitted to the President and to the Congress his report and findings on--

- (1) the engineering feasibility of the proposed construction;
- (2) the estimated cost of the proposed construction;
- (3) the part of the estimated cost which can properly be allocated to irrigation and probably be repaid by the water users;
- (4) the part of the estimated cost which can properly be allocated to power and probably be returned to the United States in net power revenues;
- (5) the part of the estimated cost which can properly be allocated to municipal water supply or other miscellaneous purposes and probably be returned to the United States.

If the proposed construction is found by the Secretary to have engineering feasibility and if the repayable and returnable allocations to irrigation, power, and municipal water supply or other miscellaneous purposes found by the Secretary to be proper, together with any allocation to flood control or navigation made under subsection (b) of this section, equal the total estimated cost of construction as determined by the Secretary, then the new project, new division of a project, or supplemental works on a project, covered by his findings, shall be deemed authorized and may be undertaken by the Secretary. If all such allocations do not equal said total estimated cost, then said new project, new division, or new supplemental works may be undertaken by the Secretary only after provision therefor has been made by Act of Congress enacted after the Secretary has submitted to the President and the Congress the report and findings involved.

Congress' authorization for Project construction is thus stated in terms of cost-repayment sufficiency of each of the water use categories independently. Each water use must bear its own burden with respect to repayment. Congress authorized independent evaluation of water users'

document explains that the inclusion of "downstream energy losses" was used only as "a sensitivity analysis. This approach recognized that the outcome of analysis might differ when non-statutory assumptions were incorporated. Any other interpretation would cause the Principles and Guidelines Procedures to amend the statute without Congressional action. Draft Environmental Impact Statement, Continued Development of the Columbia Basin Project, Washington, U.S. Bureau of Reclamation, September 1989, Tables 1, 2, 3, pp. VIII-4-2, VIII-4-3, VIII-4-4.

⁹⁶ "This Study is being conducted under the authority of the Reclamation Act of 1939 and the Columbia Basin Project Act of 1943." DEIS, p. 1-9.

⁹⁷ Act of August 4, 1939, Ch. 418, Sec. 9, 53 Stat. 1187.

and power users' ability to repay costs. The DEIS' analysis merges that evaluation in a manner contrary to the authorizing statute. If maximization of hydropower cost recovery is weighed as a "cost" of the use of water for irrigation, and the cost is calculated in benefit-cost analysis so as to make irrigation projects unviable, then Congress authorization to the Secretary will have been frustrated. Congress took no action, in this provision of the Reclamation Act or any other statute, prioritizing the use of Columbia River water for hydropower production over the use of Columbia River water for agricultural irrigation.

b. Inconsistency with the 1983 Principles and Guidelines

The DEIS' inclusion of lost hydropower benefits as a cost, when determining whether to pursue the action alternatives, is inconsistent with the 1983 Principles and Guidelines. The Principles and Guidelines characterize this category of consequential effects, which are "caused by" the project, as "other direct costs."

2.12.7 Evaluation procedure: Other direct costs.

(a) These are the costs of resources directly required for a project or plan, but for which no implementation outlays are made. Consequently, they are included in the economic costs of a plan but not in the financial costs. These costs may be important for both structural and nonstructural plans. For example, a zoning plan to preserve floodplain values by restricting development would have as a cost the value of with-project development opportunities foregone. A plan that responds to demand growth by reallocating existing outputs from low value uses to high value uses through pricing mechanisms (i.e., raising the price of existing outputs) would have as its main cost the value of the outputs to the users who forego its use as a result of its higher price. On the other hand, a structural project may displace recreation use at the project site. Whenever possible, compute these costs using the procedure set forth in this manual for computing benefits. If these costs are not quantified, they should be otherwise identified.

(b) Other direct costs also include uncompensated NED losses caused by the installation, operation, maintenance, or replacement of project or plan measures. All uncompensated net losses in economic outputs (not transfers) that can be quantified shall be considered project NED costs. The evaluation of such costs requires an analysis of project effects both within and outside the project area.

(c) Examples of other direct costs include increased downstream flood damages caused by channel modifications, dikes, or the drainage of wetlands; increased water supply treatment costs caused by irrigation return flows; erosion of land along stream banks caused by dams that prevent the replenishment of bed load material; loss of land and water recreation values through channel modifications, reduced instream flow due to consumptive use of water by irrigated agriculture, or inundation by reservoirs; increased transportation costs caused by rerouting traffic around a reservoir; new or increased vector control costs caused by the creation of wetlands; and decreased output or increased cost payoff unit of output of private

firms caused by project-induced decreases in raw materials. When applicable, compute such costs using the procedures for computing benefits contained in this chapter. Some costs such as increased water supply treatment costs, may be computed on the basis of increased costs to resource users.” (Emphasis supplied.)

The causal relationship between use of water which had been dedicated for agricultural use by both state and federal law processes in 1938-1943 and the use of water for hydropower production based on subsequent rights, privilege and sufferance is tenuous. Reclamation should address two questions:

- Which elements of “lost hydroelectric generation” have senior enough rights to entitle them to continue without interference from further development of Columbia Basin Project agriculture, i.e., are hydroelectric generation reductions “caused by” project development or otherwise “caused by” the fact that they are more junior status water uses within the Columbia River flow system?
- Does BPA’s method of calculation of “lost hydroelectric generation” use “the procedures for computing benefits contained in this chapter” including computation “on the basis of increased costs to resource users?”

i. Hydropower’s More Junior Status

The rights (entitlements) to use water from the Columbia River, for irrigation, power generation or other purposes, are created by Washington State law, except to the extent premised on the implication of Congressional enactments. The DEIS does not find that the amount of water that would flow through any of the hydroelectric facilities after development of any of the action alternatives would be less than the amount of flow stated in the various water rights certificates, or reasonably inferred from Congressional enactments in the case of hydropower facilities operated by the U.S. Army Corps of Engineers. In fact, the DEIS states that “no impacts to water rights are anticipated for any of the alternatives.”⁹⁸ Generators of hydroelectricity may be free to use water flowing in the Columbia River above their entitlements to generate power when the water is available, but they do not enjoy the right to prevent the use of water by more senior rights holders. The use of water subject to the rights of more senior rights holders when that water is not otherwise in use, and the use of water not subject to any current state-recognized right, is by virtue of privilege and sufferance, but not by matter of right.

In 2006, the Washington State legislature mandated that the Washington State Department of Ecology aggressively develop Columbia River flows. Development of Columbia River flows pursuant to any future (junior) Columbia River water rights would need to be resolved against existing water rights to use water for hydropower.⁹⁹ But development of more senior rights held by the U.S. Bureau of Reclamation for the Columbia Basin Project does not. Recognition of junior hydropower water rights above pre-existing and superior agricultural water rights so as to

⁹⁸ DF-LSSR, p. 4-64.

⁹⁹ RCW 90.03.290 (3).

preclude the development of Columbia River flows would be a clear violation of the Washington legislature's 2006 mandate. The Washington legislature created no exception to its mandate where "surplus" energy as calculated by the BPA's process is involved. Ecology's reliance on that factor in the DEIS so as to preclude further development of Columbia River flows after enactment of the 2006 statute (Ch. 90.90.RCW) would violate the statute, just as ". . . the No Action Alternative would fail to meet the specific provision of Chapter 90.90.RCW."¹⁰⁰

According to the Washington State Department of Ecology, Columbia River hydropower dams operated by the U.S. Army Corps of Engineers (Bonneville, McNary, Chief Joseph, John Day, and The Dalles) do not have state-issued water rights. Apparently, they rely upon federal reserved water rights. While the Corps holds state-certificated water rights for other purposes and in other locations, Washington state rights for their hydro facilities do not exist (and cannot be found in the Department of Ecology's water rights database.) Without adjudication of Columbia River water rights, quantification of those allegedly federal rights cannot be quantified. However, their priority dates cannot predate Congressional authorization of the action alternatives considered in the DEIS as a federal "reserved" right arises from the implication of Congress' enactment. U.S. Bureau of Reclamation's state-based water right for the Columbia Basin Project predates all Congressional authorizations for Columbia River Corps of Engineer projects.¹⁰¹ And the "reservations" of water, created only by implication, cannot be presumed to impliedly repeal the express Congressional authorization of water development for agricultural purposes in the 1939 Columbia Basin Project Act.¹⁰²

In light of the relative priorities problem, it is difficult to conclude that the use of Columbia River water for agricultural purposes "causes" reduction of hydropower generation. Rather, it is hydropower's more junior rights which "cause" reduction of hydropower generation under all the various alternatives with the exception of No Action. If causation is nevertheless presumed, measurement of the causal effect is also affected by the priorities of water rights. Only those other direct costs which result from water rights which are equivalent or senior to existing

¹⁰⁰ DEIS, pp. 2-20, 21.

¹⁰¹ The Bonneville Power Administration neither owns nor operates any hydropower production facilities. It thus has no standing to assert any existing water right for hydropower production or protect any water use against water rights holders with existing senior rights. Any operating agreement between producers of hydropower on the Columbia River, made pursuant to the BPA's authority under the Bonneville Project Act, 16 U.S.C. § 832 et seq. the Pacific Northwest Electric Power Planning and Conservation Act, 16 U.S.C. § 839 et seq. (sometimes called simply "Northwest Power Act"), or the Pacific Northwest Coordination Agreement, is made subject to the incumbent superior right created by the Columbia Basin Project Act and Washington state water rights.

¹⁰² BPA's approach assumes that Reclamation's power generation water right provides an assurance to continued generation at the current level. The "benefit" of continued hydropower production using water subject to the prior water right is artificial. Hydropower producers have thus enjoyed a windfall of accessible water during the interim that construction of water delivery facilities has been delayed to serve the eastern portions of the Columbia River Project. The future delivery of water from Grand Coulee Dam for purposes of hydropower production therefore has no economic value, as it may be discontinued, to the extent necessary to meet irrigation needs, which hold a superior right.

Columbia Basin Project water rights¹⁰³ should be counted as other direct costs.¹⁰⁴ Only the Rock Island hydropower generation should be included in this approach if it is used.

Chelan County PUD's Rock Island Dam is the only hydroelectric generating facility on the mainstem Columbia River that predates Congress' authorization of the Grand Coulee Dam and the Columbia Basin Project. Its first Columbia River water rights were established in 1928 and its construction occurred in 1929-1933. All five of the congressional authorizations for the construction of Columbia River mainstem federal hydroelectric generating facilities post-date authorization of Grand Coulee Dam and the Columbia Basin Project. The Bonneville Dam was authorized in 1937 two months after the Columbia Basin Project.¹⁰⁵ McNary Dam was authorized in 1945,¹⁰⁶ Chief Joseph Dam in 1946,¹⁰⁷ and John Day Dam and the Dalles Dam in 1950.¹⁰⁸ Water rights for Grand Coulee Dam's third power plant and pump-generating plant were created on October 16, 1969. The nonfederal hydroelectric generating facilities on the mainstem Columbia, all of whose licenses to operate are issued by the Federal Energy Regulatory Commission, include: Grant County PUD's Priest Rapids and Wanapum Dams, whose water rights have the priority date of November 28, 1955, and which were constructed in 1959 and 1964, respectively; Chelan County PUD's Rocky Reach Dam, whose water rights have the priority date of January 9, 1956 and July 8, 1968, and which was constructed in 1956 and 1969, and Rock Island Dam; and Douglas County PUD's Wells Dam, whose water rights have the priority date of September 2, 1963 and December 1, 1978, and which was constructed in 1962. Development of hydropower on the Columbia River (other than Grand Coulee Dam and Rock Island Dam) was clearly subject to the prior claim of the Columbia Basin Project's use of Columbia River water for irrigation purposes.

¹⁰³ "The proposed action is to replace groundwater with CBP surface water as a solution to declining groundwater levels within the Odessa Subarea. This surface water would be provided as part of the continued phased development of the CBP. The surface water would come from existing water rights in the Columbia River system." DEIS, p. ES-2. (Emphasis supplied.)

¹⁰⁴ In its energy effects analysis, DEIS section 4.17, pp. 4-233-240, combines "direct costs" with "other direct costs." These include reduced groundwater pumping, and additional surface water pumping (direct costs), and lost hydroelectric generation (other direct cost). The DEIS determines a net consequence to these direct and other direct costs. A "Net Change" factor is calculated, by subtracting the lost hydroelectric generation and additional surface water pumping volumes from the reduced groundwater pumping volumes for each of the respective alternatives. The analysis fails to distinguish between direct project costs and "other direct costs."

¹⁰⁵ 16 U.S.C. § 832, Act of Aug. 20, 1937, ch. 720, Sec. 1, 50 Stat. 731; July 26, 1947, ch. 343, title II, Sec. 205(a), 61 Stat. 501.

¹⁰⁶ Pub. L. 79-14, 59 Stat. 10, 21 (1945).

¹⁰⁷ Pub. L. 79-525, 60 Stat. 634, 637 (1946).

¹⁰⁸ Pub. L. 81-516, 64 Stat. 163, 179 (1950).

- ii. “Other direct costs” should be “computed on the basis of increased costs to resource users.”

The DEIS concludes that the reduction of surplus energy production due to reduction of available water supply attributable to the action alternatives

“is anticipated to have a minimal impact in the short term (1 percent under the critical water conditions in 2010) but over time would result in an adverse impact (the available energy reduction relative to surplus increases to 11 percent by 2017). It is assumed that a small amount of the regional surplus could be acquired as an offset for the additional energy consumed by this alternative and that no additional generating facilities would be needed.” “Cumulative impacts to energy resources would include lost downstream hydroelectric generation resulting from this alternative compounded by the additional small loss of downstream generation from the lake Roosevelt Incremental Storage Releases Project. The extent of those compounding impacts would be minimal.”¹⁰⁹

Apparently disregarding this more sanguine view of the effects of the action alternatives on energy production, and the “offset” of available regional surplus energy, the DETR/DEIS adopts BPA’s analysis and contends that the 100 year cumulative discounted cost of the “lost benefit,” using the BPA “surplus” approach, is \$156.4-\$557.3 million, depending on the alternative and the discount rate applied.¹¹⁰

But that “lost benefit” estimate was not established pursuant to Section 2.12.7 (c) of the Principles and Guidelines. Section 2.12.7 (c) requires that other direct costs should be computed on the basis of increased costs to resource users.

BPA’s analysis is not a computation of increased costs to resource users. It neither computes increased costs of water to hydropower producers or the cost of hydropower to hydropower consumers. It is important to distinguish between the costs of users of water and the costs of consumers of hydropower. At present, there is no cost to use water for hydropower production. Likewise, there will be no cost to use water for hydropower production under all of the action and No Action alternatives. There would thus be no increased water costs to hydropower. The hydropower consumer’s cost of hydropower includes the value added to the water’s use by the manufacture of hydropower (dams, turbines, generators, etc), and is affected by the overall supply of hydropower in a complex, mixed multi-generation power market. These manufacturing cost and market factors are taken into account in BPA’s ratemaking process where cost recovery is an essential component.¹¹¹ But none of these manufacturing components

¹⁰⁹ DEIS, p. 4-238.

¹¹⁰ “The average annual loss in hydropower benefits was estimated by BPA at \$6.939 million for all four partial alternatives.” “The same average annual loss in hydropower benefits, \$17.638 million, was estimated by BPA for all four full replacement alternatives.” DETR, p. 71. DEIS Table 2-13, p. 2-72, Table 2-14, p. 2-73, DETR Table NED_BCA1, p. 4, Table NED_BCA2, p. 5.

¹¹¹ See, section 7(i) of the Northwest Power Act, 16 U.S.C. 839e(i), Procedures Governing Bonneville Power Administration Rate Hearings, 51 FR 7611 (1986). Once rates have been decided, BPA submits them to the Federal

is “caused by” the use of the underlying resource (water) for agriculture instead of for hydropower.

BPA’s analysis computes loss of “surplus energy.” Under BPA’s approach, energy in any year is “surplus” if it is greater than “firm energy” in a base case year. DEIS section 3.17.2 describes “firm energy” as “energy produced on a guaranteed basis.” “In hydroelectric generation, firm energy is the energy that can be reliably generated during the region’s worst historical water conditions.” “A historic low water year (1937) is the base case used. . . .” “This approach is consistent in all planning years and is accepted by all participants in the Pacific Northwest energy planning process.” “These regional total surpluses [over the base case] are used to evaluate the impact of each of the alternatives.” BPA’s method is incorrect to the extent that it presumes that any supply of water to hydropower is “guaranteed” other than through the water rights of each hydropower facility, as established under Washington State’s water law.

The BPA’s method also does not consider the effects of energy conservation or the availability of alternative sources of energy, including wind-generated energy. Nonfirm energy (energy other than that produced on a guaranteed basis) also has value, because water pumping can be timed to coordinate with nonfirm power generation facilities. Because of the size of water storage facilities, including Lake Roosevelt and Banks Lake, available to the Columbia Basin Project, pumping water for delivery into the Columbia Basin Project irrigation delivery system can be accomplished during periods when wind energy is available, thereby “integrating” the resource into the regional energy production system.

5. Environmental Compliance and Mitigation Costs

A basic purpose of the study is to address environmental concerns and interests including Endangered Species Act matters.¹¹² The DEIS identifies the environmental assets that may be affected¹¹³ and discusses the environmental consequences of the actions under consideration.¹¹⁴ However, because a preferred alternative has not yet been selected, it is uncertain whether the evaluations contained in Sections 4.8 through 4.11 of the DEIS are sufficient. This is addressed by comments submitted by the U.S Fish and Wildlife Service.

“[C]onsultation under section 7 of the Endangered Species Act of 1973, as amended, will be conducted at a later date.”¹¹⁵

Energy Regulatory Commission for confirmation and approval. FERC's approval is based on whether the proposed rates are sufficient to recover BPA's total costs.

¹¹² DEIS, p. 1-9. See also, p. 4-100.

¹¹³ DEIS, Ch. 3.

¹¹⁴ DEIS, Ch. 4.

¹¹⁵ DFWCAR, p. 23.

“This report does not complete consultation under section 7 of the ESA; therefore the Service recommends that Reclamation complete consultation with the Service on this project, if Reclamation moves forward to implement a preferred alternative.”¹¹⁶

“Our evaluation and analyses indicate that none of the action alternatives will benefit fish, wildlife, or their habitats, to the degree that negative effects will be outweighed by positive effects, without the added benefits of mitigation and wildlife habitat improvements. Mitigation and wildlife habitat improvements could and may be done, but are not currently proposed as part of the Project.”¹¹⁷

“Although irrigation and agricultural conversion may adversely impact riparian habitats, it is also true that seepage and leaks from irrigation systems may create riparian and wetland areas.”¹¹⁸

Sections 2.12. 4 and 2.12.5 identify that environmental mitigation costs are NED costs. The U.S. F.W.S. proposes 31 environmental mitigation strategies¹¹⁹ and the Washington State Department of Fish and Wildlife proposes additional “mitigation measures and enhancements.”¹²⁰ We are concerned that delaying initiation of consultation under the ESA will cause significant project delays once Reclamation adopts a preferred alternative. Reclamation, U.S F.W.S and W.D.F.W. should begin work now to explore the interaction between the proposed action and the Endangered Species Act. All of the action alternatives are sufficiently similar to permit initiation of that process now. Identification of the extent of ESA compliance and fish and wildlife impact mitigation scenarios should be accomplished earlier, rather than later, so that the costs of necessary mitigation will become early-known and anticipated in project funding.

VIII. Conclusion

We encourage the Bureau of Reclamation and the Washington State Department of Ecology to proceed diligently and quickly to publication of a final environmental impact statement. Reclamation and Ecology should design the project conservatively so as to meet the clear current need without interference with or construction of the complete Columbia Basin Project at this time. Reclamation and Ecology should project benefits realistically and avoid cost projections which are unrealistic or overly conservative. The projects under consideration are essential to the well-being of Adams County’s citizens. We support them.

¹¹⁶ DFWCAR, p. 61.

¹¹⁷ DFWCAR, p.56.

¹¹⁸ DFWCAR, p. 15.

¹¹⁹ DFWCAR, pp. 61-65.

¹²⁰ Washington Department of Fish and Wildlife, “Odessa Subarea Special Study, Wildlife Survey Final Report,” October 2010, pp 22-25.

Respectfully Submitted,

Hon. Roger Hartwig, Chairman

Hon. Rudy Plager, Commissioner

Hon. Jeff Stevens, Commissioner
Adams County Commission

Dated this _____ day of January, 2011.