

**GUIDANCE TO
DRINKING WATER REVOLVING FUND (DWRF)
APPLICANTS AND CONSULTANTS
REGARDING THE PREPARATION OF AN
ALTERNATIVE JUSTIFIABLE EXPENDITURE (AJE) ANALYSIS**

I. Introduction

Some projects proposed for DWRF funding include work, such as the full-width repaving of streets, which is over and above what is necessary to complete the needed water system improvements. The Alternative Justifiable Expenditure (AJE) methodology is used for such a multi-purpose project where there is a physical overlap between eligible and ineligible project components. The AJE methodology is an accounting technique that computes the eligibility percentage of a multi-purpose project by assigning work items to specific cost categories and by estimating the costs of two theoretical single purpose projects. Since savings are realized when the two overlapping single purpose projects are constructed simultaneously, the AJE process serves to divide the cost savings between the two projects so that the maximum allowable DWRF funding can be provided for your multi-purpose project.

II. Contents of an AJE Analysis

The AJE analysis has two steps. The first step involves the tabulation of the estimated quantity and unit price of each item in the bid proposal of the **Multi-Purpose Project** (i.e., the project proposed for DWRF funding) and the assignment of each item to one or more of the following cost categories:

Specific Purpose Water Costs -- an item whose cost can be attributed entirely to DWRF-eligible water improvements;

Specific Purpose Other Costs -- an item whose cost can be attributed entirely to a benefit other than the DWRF-eligible water improvements; or

Joint Costs -- an item whose cost is shared between the DWRF-eligible work and other improvements and, therefore, cannot be attributed exclusively to either benefit.

Please note that the subtotaled costs of the three assigned cost categories must be equal to the total construction cost of the Multi-Purpose Project.

The second step involves developing two theoretical projects as elements of the AJE analysis for cost comparison purposes:

Theoretical Single Purpose Water Project -- the cost-effective project which, would provide only the water-related benefits attributable to the proposed Multi-Purpose Project.

Theoretical Single Purpose Other Project -- the cost-effective project which, would provide only the non-water-related benefits attributable to the proposed Multi-Purpose Project.

Please note that the costs of the two Theoretical Single Purpose Projects, when added together, must always exceed the total cost of the Multi-Purpose Project.

If they do not, either there is an error in your preparation of the AJE analysis or the Multi-Purpose Project is not a cost-effective design.

The subtotaled costs for each theoretical project and for each assigned cost category of the proposed Multi-Purpose Project are used in the AJE Calculation Formula, shown on page 9 below, to determine the portion of your project that is eligible for DWRP funding (i.e., the AJE percentage).

III. Preparation of an AJE Analysis

We strongly urge applicants and their consultants to meet with their RLS project manager before starting the preparation of an AJE analysis.

A draft AJE analysis based on estimated construction costs shall be developed and submitted to your RLS project manager in accordance with the negotiated project milestone schedule. Submittal of the draft AJE analysis will usually coincide with the submittal of plans and specifications, typically soon after the engineer has completed quantity take-off measurements for the bid proposal in the contract documents.

If the Multi-Purpose Project is divided into more than one construction contract, a separate AJE analysis will need to be performed and submitted for each contract.

A. *Draft (Estimated) AJE*

The draft AJE submittal must include a spreadsheet, similar to Example 1 or 2 below, with cost breakdowns for the two Theoretical Single Purpose Projects and the Multi-Purpose Project based on the engineer's estimates. A preliminary eligibility percentage, using the AJE Calculation Formula shown on page 9 below, must also be provided.

An Excel spreadsheet which you can use to produce an AJE analysis can be downloaded from the RLS web site (http://www.michigan.gov/documents/deq/deq-ess-mfs-formsguidance-AJEblank_248761_7.xls).

The draft submittal will be reviewed by your RLS project manager for completeness, appropriateness of the cost assignments, correct application of the AJE formula, etc. Your RLS project manager will provide you with comments on the draft AJE, in accordance with the negotiated milestone schedule, and you will be required to modify the AJE based on those comments. A second draft AJE may have to be submitted for review and comment prior to the preparation of a final version. Your RLS project manager may also ask you to provide a schematic drawing or street map depicting the two Theoretical Single Purpose Projects and the Multi-Purpose Project

B. *Final (As-bid) AJE*

After bids have been opened and the successful bidder(s) identified, the AJE percentage(s) must be recalculated based on as-bid quantities and unit prices. Modifications may also be required based on approved addenda to the plans and specifications, or as a result of errors discovered by you or your RLS project manager. The final AJE calculation(s) and spreadsheet(s) must be submitted no later than the quarterly due date of the DWRP Application Part III (Bid Data), or, if other arrangements are made, in accordance with the negotiated milestone schedule. If more than one construction contract is subject to an AJE analysis,

the calculations for each separate contract will be combined to generate a single AJE percentage applicable to the entire Multi-Purpose Project.

C. *Eligibility Reminder*

It is important to note that, for DWRP loan projects, the Department of Environmental Quality (DEQ) will not issue a construction permit for water mains that are larger in diameter than the pipe size required to convey peak 20-year demands (as documented in a Project Plan and Reliability Study), or which are designed “primarily for growth” or “primarily for fire protection.” Such water mains, if constructed, are 100 percent DWRP-ineligible. Thus, there will never be a DWRP project in which a water main is “partially eligible” (i.e., a Joint Costs item in an AJE analysis). Water mains will always be 100 percent or zero percent eligible depending on whether they are needed to solve a documented drinking water quality problem or to maintain compliance with the Safe Drinking Water Act. The same logic applies for water treatment plants and other drinking water facilities and appurtenances.

D. *Common Errors in the AJE Analysis*

One of the most common errors made in preparing an AJE analysis is assigning a given item of the Multi-Purpose Project to the wrong cost category. This error can appear in any number of ways. For example, an item that belongs in the Specific Purpose Water Costs category may be assigned to Specific Purpose Other Costs, or vice versa, or an obvious Joint Costs item may be assigned to either Specific Purpose Water Costs or Specific Purpose Other Costs. Sometimes these errors are simply due to an oversight. Other times, these mistakes are made because the individual preparing the AJE does not fully understand how certain items fit into the AJE calculations. In either case, these errors can seriously impact the accuracy of deriving a percentage of eligible costs for a project, and should be corrected whenever found. Ideally, most mistakes will be identified upon review of a draft AJE and corrected on the final version.

Numerous errors in basic arithmetic can also result in an unsatisfactory AJE submittal. This can especially occur when there are multiple contracts or project sub-areas (streets) within one large project. Examples include cases in which the total costs in the three subcategories do not equal the Multi-Purpose Project cost, or where the numbers used in the AJE formula do not match the subtotals on the spreadsheet(s) of the itemized project components for the real or theoretical projects. Another serious error, mentioned previously, occurs if the costs of the two Theoretical Single Purpose Projects, when added together, are less than the total cost of the Multi-Purpose Project for the overall project and/or for sub-areas of the project. The Multi-Purpose Project **must** be more cost-effective than the sum of the two Theoretical Single Purpose Projects.

Another serious error can occur if the various items in the AJE **do not exactly match** the items and quantities on the bid form in the DEQ approved final plans and specifications (including any approved addenda) and, for the final AJE, the unit prices of the successful low bidder(s). You can catch this error by comparing the approved bid documents with the AJE to verify that the items match.

Often, inaccurate estimates of quantities and costs for the Theoretical Single Purpose Projects are made for those items defined as Joint Costs in the Multi-Purpose Project. For example, when estimating quantities of road restoration items such as bituminous top course, it is **not** correct to divide the quantity of

bituminous by making a predetermined proportional split between the Theoretical Single Purpose Water Project and the Theoretical Single Purpose Other Project such that, when these quantities are added together, they exactly equal the quantity of bituminous in the Multi-Purpose Project. This method is likely to result in very inaccurate cost estimates on complex AJE projects. Similarly, it is all too easy to underestimate the costs of various lump sum joint items such as mobilization, traffic control, or lawn restoration in the Theoretical Single Purpose Projects. In reality, the costs of lump sum items may not differ much, if at all, between each theoretical project and the Multi-Purpose Project.

Finally, a common mistake is to assign a single item to Joint Costs that, in reality, does not involve an inseparable mix of eligible and ineligible components but instead includes measurable quantities of “100 percent water” and “100 percent other” work. In such cases, the quantities and their associated costs can be segregated into the Specific Purpose Water and Specific Purpose Other categories, and likewise split amongst the Theoretical Single Purpose Projects.

IV. Application of the AJE Percentage

A. *Determining the Eligible Loan Amount*

The final (as-bid) AJE percentage will be applied to line item costs contained in the DEQ Order of Approval as follows:

1. Items **prorated** by the AJE percentage:
 - Administrative Expenses
 - Design Engineering Fees
 - Construction Engineering Fees
 - Construction Costs
2. Items **not prorated** by the AJE percentage:
 - Project Planning Costs
 - Municipal Revenue Systems/Water Ordinance Development Charges
 - Bid Advertisement Cost
 - Bond Advertisement/Referendum Expenses
 - Capitalized Interest Payments
3. Items that **may be prorated** by the AJE percentage, depending on how they specifically relate to the DWRP-eligible project:
 - Legal Fees
 - Bond Counsel/Financial Consultant Fees
 - Relocation Expenses
 - Land-related Expenses
 - Small Purchase Construction Costs
 - Applicant Staff Construction Costs
 - Equipment Purchases
 - Miscellaneous Expenses

Generally, services that encompass the full range of a Multi-Purpose Project will be prorated. Services that are confined to the DWRP project only, and can be separately tracked and invoiced from ineligible costs, will not be prorated.

Questions about whether the AJE percentage applies to a specific line item may be directed to your RLS project manager.

B. AJE/Eligibility Procedures Following Loan Award

Since loan disbursements can be approved only for DWRF-eligible project costs, the AJE percentage must be applied to the appropriate line items prior to submittal of any disbursement request.

Construction contract change orders will be prorated by the AJE percentage when appropriate, depending on the nature of the work item(s) involved. Your RLS project manager will determine when an AJE percentage will be applied to construction contract change orders and change order approval correspondence will include specific references to the AJE percentage used.

New items added by change order will be evaluated on their own merits, meaning they could be 100 percent eligible, zero percent eligible, or prorated by the original AJE percentage. As-built quantity adjustments (both increases and decreases) to original bid items will normally be prorated by the AJE percentage. "New item" or "new work" is defined as something outside the original scope of the project. It may or may not be an item that was priced in the original bid. For example, a project may have included 8-inch water main, but an **extension** of this item added by change order and not in the original project plan makes it a "new" item of work.

C. Project Completion

The as-bid AJE calculations will not be revised at the end of the project based on final as-built construction costs. Instead, a construction eligibility ratio will be developed by dividing final eligible construction costs by total construction costs. Your RLS project manager will review all final project cost documentation and ensure that the construction eligibility ratio is applied to all appropriate line items for a determination of the final loan amount.

D. Filing

Both draft and final AJEs, along with any correspondence related to them, should be saved in the original project file.

V. Method of Submittal

It may be helpful to hold a special meeting to discuss AJE preparation procedures with project representatives. The individual(s) responsible for preparing the AJE should become familiar with this guidance long before a draft is submitted.

If possible, AJEs should be submitted on a computer disk (provided that the software product used is compatible with the RLS project manager's computer software); via e-mail or Internet (if in a compatible format for the RLS project manager); or exclusively as a paper "hard copy." Typically, AJEs are developed using software that is ideal for creating large spreadsheets, such as Microsoft Excel, which greatly simplifies the numerical calculations involved. Currently, the DEQ supplies Microsoft Windows applications software for its employees' computer workstations, as well as Microsoft Internet Explorer and GroupWise.

VI. Typical Multi-Purpose Projects Requiring an AJE Analysis

There are many potential examples of a Multi-Purpose Project that a community may propose to build that would require an AJE computation. Perhaps the simplest case is one in which the community wants to construct street restoration improvements over and above what is necessary to build the DWRP-eligible project. A community may want to provide full width pavement restoration on a street in which undersized water main is being replaced. Constructing only the water main project may necessitate disrupting some portion of the street but not the full width. Many communities would desire full width restoration to provide an even road surface following restoration. Sometimes, a community chooses simply to widen a road, or to provide upgraded materials on a given street. These additional road improvements represent benefits that are not DWRP-eligible. However, they include costs that are shared with the eligible project. Therefore, an AJE analysis is performed to ascertain the eligibility percentage of the Multi-Purpose Project, resulting in a proration that can be applied to other applicable costs (engineering, etc.). The following example shows a simplified AJE based on a project of this type.

A. *Sample AJE Example 1*

Small water main replacement with full-width street restoration.

In the first sample AJE, shown on Page 8, the listed items and their associated quantities and unit prices are fictitious but illustrate the concept of what an AJE spreadsheet should look like. The costs of the water main and other related appurtenances are DWRP-eligible water system improvements and these items form the basis of the Theoretical Single Purpose Water project. Some items, such as curb & gutter removal and replacement, can be split in a measurable way between Specific Purpose Water Costs and Specific Purpose Other Costs. Many lump sum items, such as traffic control and detour signage, are joint costs since their cost is the same for both theoretical single purpose projects.

It is very important to understand that any of the items in this example could be assigned to Specific Purpose Water Costs, Joint Costs, or Specific Purpose Other Costs in any given real Multi-Purpose Project depending on the nature of the project. Page 9 shows the calculations from Example 1 used to derive the AJE percentage.

In many projects, as illustrated in Example 1, less than one-half ($\frac{1}{2}$) of the width of the streets where new water mains are to be installed will be impacted by the DWRP project construction. Consequently, in performing the AJE analysis, the Theoretical Single Purpose Other project will involve the full-width milling and replacement of the existing pavement. Since your project may differ from this example, a detailed discussion regarding the proper method for calculating eligible road restoration is provided in Section VII at the end of this guidance.

AJE CALCULATION FORMULA

(for Example 1)

A	Specific Purpose Water Costs	\$180,286.51
B	Specific Purpose Other Costs	\$15,700.00
C	Joint Costs	\$173,518.69
D	Theoretical Single Purpose Water Costs	\$211,919.88
E	Theoretical Single Purpose Other Benefit Costs	\$186,218.69
	Multi- Purpose Project Cost	\$369,505.20

$$\text{Eligible Amount} = A + \left[\frac{(D - A)}{(D - A) + (E - B)} \times C \right]$$

$$= \$180,286.51 + \left[\frac{(\$211,919.88 - \$180,286.51)}{(\$211,919.88 - \$180,286.51) + (\$186,218.69 - \$15,700.00)} \times \$173,518.69 \right]$$

$$= \$180,286.51 + [(\$31,633.37 \div \$202,152.06) \times \$173,518.69] = \$207,442.19$$

$$\% \text{ Eligible} = \frac{\text{Eligible Amount}}{\text{Multi-Purpose Project Cost}} = \$207,442.19 \div \$369,505.20 = 56.14\%$$

Sample AJE Example 2

Small water main replacement with added sewer improvements.

Another sample AJE is shown on Page 11. In this case, the Multi-Purpose Project involves water main construction with additional storm and sanitary sewer improvements. As with the first example, the listed items, along with their associated quantities and unit prices, are fictitious and do not represent real measurements or costs from an actual project. Once again, the costs of the water main and other related appurtenances are DWRP-eligible water system improvements. Road restoration items are joint costs in the Multi-Purpose Project. The Theoretical Single Purpose Water Project also includes restoration necessary to return the roadway back to its original condition. The Theoretical Single Purpose Other Project includes all the storm sewer and sanitary sewer improvements included in the Multi-Purpose Project that are not part of the Theoretical Single Purpose Water Project, as well as the quantities of road restoration necessary to install the sewers. Page 12 shows the calculations used to derive this AJE percentage.

SAMPLE A JE, EXAMPLE 2
SMALL WATER MAIN REPLACEMENT WITH STORM AND SANITARY SEWER IMPROVEMENTS

No.	Item	Quant.	Unit	Multi-Purpose Project						Theoretical Single Purp. Water Project			Theoretical Single Purp. Other Project				
				Specific Purpose Water Costs		Joint Costs		Specific Purpose Other Costs		Quant.	Unit Price	Amount	Quant.	Unit Price	Amount		
				Quant.	Amount	Quant.	Amount	Quant.	Amount								
1	Mobilization	1	LSUM		\$5,000.00	1		\$5,000.00	1	\$5,000.00	\$5,000.00	1	\$5,000.00	\$5,000.00			
2	Remove bit. driveway	155	SYD	155	\$465.00			\$465.00		\$3.00	\$465.00		\$3.00				
3	Remove bit. pavement	4,123	SYD		\$28,861.00	4,123		\$28,861.00		\$7.00	\$7,700.00	3,733	\$7.00	\$26,131.00			
4	Remove curb and gutter	2,320	LFT		\$9,280.00	2,320		\$9,280.00		\$4.00	\$3,600.00	2,720	\$4.00	\$10,880.00			
5	Bore tree	7	EA	7	\$3,325.00			\$3,325.00		\$475.00	\$3,325.00		\$475.00				
6	Remove tree, 8-18 inch	2	EA	2	\$500.00			\$500.00		\$250.00	\$500.00		\$250.00				
7	8" Water main	3,750	LFT	3,750	\$90,000.00			\$90,000.00		\$24.00	\$90,000.00		\$24.00				
8	Trench backfill	12,889	CYD		\$96,667.50	12,889		\$96,667.50		\$7.50	\$15,622.50	12,444	\$7.50	\$93,330.00			
9	8" Valve and box	4	EA	4	\$2,500.00			\$2,500.00		\$625.00	\$2,500.00		\$625.00				
10	8" x 8" Tee	4	EA	4	\$1,000.00			\$1,000.00		\$250.00	\$1,000.00		\$250.00				
11	8" 45-degree Bend	2	EA	2	\$400.00			\$400.00		\$200.00	\$400.00		\$200.00				
12	12" x 8" Cross	2	EA	2	\$1,200.00			\$1,200.00		\$600.00	\$1,200.00		\$600.00				
13	1" Copper water service	880	LFT	880	\$9,680.00			\$9,680.00		\$11.00	\$9,680.00		\$11.00				
14	Tap for 1" water service	20	EA	20	\$4,500.00			\$4,500.00		\$225.00	\$4,500.00		\$225.00				
15	Auger service under road	20	EA	20	\$6,000.00			\$6,000.00		\$300.00	\$6,000.00		\$300.00				
16	5" Hydrant	8	EA	8	\$9,600.00			\$9,600.00		\$1,200.00	\$9,600.00		\$1,200.00				
17	8" Sanitary sewer	1,385	LFT		\$99,720.00	1,385		\$99,720.00		\$72.00		1,385	\$72.00	\$99,720.00			
18	6" Sanitary sewer lead	1,523	LFT		\$33,506.00	1,523		\$33,506.00		\$22.00		1,523	\$22.00	\$33,506.00			
19	Sanitary manhole	6	EA		\$10,074.00	6		\$10,074.00		\$1,679.00		6	\$1,679.00	\$10,074.00			
20	12" Storm sewer	373	LFT		\$9,884.50	373		\$9,884.50		\$26.50		373	\$26.50	\$9,884.50			
21	New catch basin	2	EA		\$2,200.00	2		\$2,200.00		\$1,100.00		2	\$1,100.00	\$2,200.00			
22	Storm manhole	1	EA		\$1,201.00	1		\$1,201.00		\$1,201.00		1	\$1,201.00	\$1,201.00			
23	Adjust manhole to grade	11	EA		\$4,400.00	11		\$4,400.00		\$400.00	\$800.00	9	\$400.00	\$3,600.00			
24	Adjust valve box to grade	7	EA		\$980.00	7		\$980.00		\$140.00	\$700.00	2	\$140.00	\$280.00			
25	Concrete curb and gutter	2,320	LFT		\$23,200.00	2,320		\$23,200.00		\$10.00	\$9,000.00	2,720	\$10.00	\$27,200.00			
26	Restore bit. driveway	178	SYD	178	\$1,498.76			\$1,498.76		\$8.42	\$1,498.76		\$8.42				
27	Restore lawn surface	2,645	LFT		\$12,034.75	2,645		\$12,034.75		\$4.55	\$12,034.75		\$4.55				
28	Sand subbase	613	CYD		\$5,517.00	613		\$5,517.00		\$9.00	\$5,517.00		\$9.00				
29	Aggregate base	2,416	CYD		\$44,696.00	2,416		\$44,696.00		\$18.50	\$44,696.00		\$18.50				
30	Bituminous top course	340	TON		\$11,560.00	308		\$10,472.00		\$34.00	\$3,094.00	308	\$34.00	\$10,472.00			
31	Bituminous leveling course	340	TON		\$9,798.80	308		\$8,876.56		\$28.82	\$2,622.62	308	\$28.82	\$8,876.56			
32	4" Yellow pavement mark.	1,570	LFT		\$1,020.50	1,570		\$1,020.50		\$0.65	\$230.75	1,350	\$0.65	\$877.50			
33	Traffic control	1	LSUM		\$5,000.00	1		\$5,000.00		\$5,000.00	\$5,000.00	1	\$5,000.00	\$5,000.00			
34	Detour signing	1	LSUM		\$1,000.00	1		\$1,000.00		\$1,000.00	\$1,000.00	1	\$1,000.00	\$1,000.00			
35	Lighted plastic drum	20	EA		\$35.00	20		\$700.00		\$35.00	\$700.00	20	\$35.00	\$700.00			
36	Lighted barricade	2	EA		\$75.00	2		\$150.00		\$75.00	\$150.00	2	\$75.00	\$150.00			
37	Soil erosion control	1	LSUM		\$1,500.00	1		\$1,500.00		\$1,500.00	\$1,500.00	1	\$1,500.00	\$1,500.00			
38	Dust palliative applied	40	TON		\$2,000.00	40		\$2,000.00		\$50.00	\$2,000.00	32	\$50.00	\$1,600.00			
TOTAL					\$550,619.81			\$142,703.51		\$249,320.56			\$156,585.50		\$210,883.88		\$398,646.56

AJE CALCULATION FORMULA

(for Example 2)

A	Specific Purpose Water Costs	\$142,703.51
B	Specific Purpose Other Costs	\$156,585.50
C	Joint Costs	\$249,320.56
D	Theoretical Single Purpose Water Costs	\$210,883.88
E	Theoretical Single Purpose Other Benefit Costs	\$398,646.56
	Multi- Purpose Project Cost	\$550,619.81

$$\text{Eligible Amount} = A + \frac{(D - A)}{(D - A) + (E - B)} \times C$$

$$= \$142,703.51 + \frac{(\$210,883.88 - \$142,703.51)}{(\$210,883.88 - \$142,703.51) + (\$398,646.56 - \$156,585.50)} \times \$249,320.56$$

$$= \$142,703.51 + [(\$68,180.37 \div \$310,241.43) \times \$249,320.56] = \$197,504.17$$

$$\% \text{ Eligible} = \frac{\text{Eligible Amount}}{\text{Multi-Purpose Project Cost}} = \$197,504.17 \div \$550,619.81 = 35.87\%$$

B. Special Cases: Combined SRF/DWRF Projects

Sometimes a Multi-Purpose Project will include overlapping DWRF and State Revolving Fund (SRF) eligible components, and the municipality will choose to submit an application to both programs on approximately the same schedule (typically for two loan closings in the same quarter of a given fiscal year). There are some special considerations for a dual project of this type. For example, two AJEs will be required, one for the DWRF project and one for the SRF project. The exclusively SRF eligible components (for example, sewer) are considered “other” costs in the DWRF AJE project. Likewise, the exclusively DWRF-eligible components (for example, water mains) are considered “other” costs in the SRF AJE project. Of course, items such as road removal and resurfacing will physically overlap both DWRF and SRF work, and will represent joint costs in the AJE calculations for both programs. Applicants and consultants will need to carefully review the AJE calculations for each program to ensure that the combined eligible percentages do not exceed 100 percent. For example, the DWRF AJE might result in a 40 percent eligible project and the SRF AJE might result in a 50 percent eligible project such that the combined eligibility is 90 percent. It is likely that such combined projects will always have some percentage of costs that are entirely ineligible for either the DWRF or the SRF. As a result, the two percentages from the respective AJEs should not ever equal 100 percent eligibility. Since these multi-purpose combined SRF/DWRF projects can be exceedingly complex, applicants and consultants are encouraged to work extra closely with DEQ staff to help sort out any difficulties that could arise.

VII. AJE Definitions and Assignment of Costs

A. THEORETICAL SINGLE PURPOSE DRINKING WATER PROJECT is defined as the theoretical cost-effective project designed to provide only the DWRF-eligible drinking water improvements of the proposed Multi-Purpose Project. This project will generally include the following:

1. Construction of water mains.
2. Construction of necessary appurtenances such as service leads, corporation stops, hydrants, taps, valves, crosses, tees, reducers, sleeves, bends, curb stops and boxes, offsets, etc.
3. Restoration items necessary to backfill the construction trench and return roads, utilities, lawns, etc., back to their pre-existing, original condition.

B. THEORETICAL SINGLE PURPOSE OTHER BENEFIT PROJECT is defined as the theoretical cost-effective project designed to provide only the non-drinking water benefits and/or benefits not eligible for DWRF financing of the proposed Multi-Purpose Project. This project may include any of the following:

1. Construction of sanitary sewers and related work such as manholes, sewer laterals, tee, wyes, etc.
2. Construction of storm sewers and other drainage improvements such as catch basins, connections, manholes, etc.
3. Road and surface restoration items necessary to provide the additional improvements not realized by Theoretical Single Purpose Water Project and/or restoration that represents additional improvements over pre-

existing field conditions. In certain cases, the road improvements may equal the full quantity of specific work items in the Multi-Purpose Project.

4. Construction of drinking water improvements that have been identified as DWRF-ineligible.

C. *MULTI-PURPOSE PROJECT* is defined as the actual project to be built, one that combines overlapping DWRF-eligible work with other benefits. It is always more cost-effective than the sum of the costs of the Theoretical Single Purpose Water Project and Theoretical Single Purpose Other Project. Proposal items in the Multi-Purpose Project are each assigned to one of the following categories:

1. **Specific Purpose Water Costs**

These construction items serve only the DWRF-eligible water system improvement function. Examples are:

- Water main
- Necessary drinking water appurtenances such as service leads, corporation stops, hydrants, taps, valves, crosses, tees, reducers, sleeves, bends, curb stops and boxes, offsets, etc.
- Restoration and/or replacement of existing underground utilities and surface features in direct conflict with eligible water improvements

2. **Specific Purpose Other Costs**

These construction items only serve to provide a DWRF-ineligible benefit. Examples are:

- Ineligible water main extensions and related improvements
- Storm sewers and related drainage improvements
- Sanitary sewers and related wastewater improvements
- Other improvements/utilities not necessary to construct the DWRF-eligible project such as new sidewalk, new curb & gutter, new driveways, new traffic signals/signs, paving of dirt roads, etc.

3. **Joint Costs**

These construction items serve a dual function, providing combined DWRF-eligible and DWRF-ineligible benefits that cannot be completely and accurately separated on a bid proposal form. Examples are:

- Bituminous Road Surfacing and/or Concrete Pavement
- Curb & Gutter Replacement
- Sand Sub-base
- Aggregate Base
- Surface Restoration (lawns, driveways, etc.)
- Mobilization
- Traffic Control

- Detour Signing
- Dust Control (Palliative)
- Sedimentation Control
- Pavement Marking

C. DWRF-Eligible Street Restoration

When a trench box can be used for water main installations, the DWRF-eligible width of street restoration is the trench width plus one foot of overlap on each side of the trench. In cases where a sloped trench must be used, the following rules-of-thumb apply for two-lane streets and roads:

- If the main is located at or next to the curb, restoration of one-third ($\frac{1}{3}$) of the width of the street is eligible for DWRF funding.
- If the main is located in or near the middle of a traffic lane, restoration of one-half the width of the street is eligible for DWRF funding.
- If the main is located in the center of the street, restoration of the trench width, plus one foot of overlap on each side of the trench, is eligible for DWRF funding.

A second concern regarding eligible street restoration involves determining what is the proper Theoretical Single Purpose Other project with regard to full-width street restorations. In some cases, the Theoretical Single Purpose Other project is to be composed of only those items that are not part of the Theoretical Single Purpose Water project (i.e., the additional quantity of paving); in other cases, the Theoretical Single Purpose Other project must be the comparable “stand-alone” project (i.e., the milling and full-width restoration of streets). The following rules-of-thumb apply for determining what is the proper Theoretical Single Purpose Other project to use in preparing your AJE:

- If the eligible construction will disturb one-third ($\frac{1}{3}$) or less of the total width of a three- or four-lane road, then the Theoretical Single Purpose Other project will be based on the full-width milling and replacement of the existing pavement.
- If the eligible construction will disturb more than one-third ($\frac{1}{3}$) of the total width of a three- or four-lane road, then the Theoretical Single Purpose Other project will include the additional quantity of paving needed to complete full-lane restorations.
- If the eligible construction will disturb less than one-half ($\frac{1}{2}$) of the total width of a two-lane road, then the Theoretical Single Purpose Other project will be based on the full-width milling and replacement of the existing pavement.
- If the eligible construction will disturb one-half ($\frac{1}{2}$) or more of the total width of a two-lane road, then the Theoretical Single Purpose Other project will include the additional quantity of paving needed to complete the full-width restoration of the road.