Rev 1, 1-10-19

T. Butine

**Water Conservation Plan Content Analysis**

**Introductory note:**

Hi Jon, Adam, Chris and Zach,

Thanks again for the time you spent with me last Friday. In that meeting I gave myself an action item to more closely review the latest StG and Ivins plans to see if my previous conclusions were valid. I did that task last Saturday by outlining the existing plans and mapping the contents into the outline of an industry standard plan, and found that my previous conclusions still appeal valid. Since then, I’ve been trying to figure out how to explain that to you in an effective way. This is not a simple subject, and trying to explain it in an email probably won’t work very well. I’ll give you the short version here. Let me know if you want me to meet with your staffs before, during or after we talk about it.

Here are some summary thoughts:

* The main job of a plan is to commit “appropriate” work to be done by defining who is to do what, when, with what resources, with what accountability, and, importantly, why. Figuring out “appropriate” work is at least as important as planning how to do it. The existing water conservation plans don’t do much of either. They contain good information that is required background for the planning, but they are not plans. The conservation experts at the DWRe agree, but have not been allowed to go in that direction.
* I know some people think that from my background I probably way over-kill this planning business. Yes, I’ve been involved with some pretty monstrous programs. An airplane program has $trillions in cash flow over 50+ years lifespans, and they all have one huge project near the front-end: the design, build and certification of the first airplane. It’s really complicated, occupying 30,000 direct employees over 6-8 years, spending $25B. Every time we go ahead with a project like that, it is a bet of the whole company. If it fails, we go bankrupt. But I’ve only really been involved in two of those in a senior capacity. I’ve been involved and led many, many programs the size of Washington County’s Water Conservation Program, and smaller. The principles are all the same, just the complexity changes. Our Water Conservation Program is in a way as serious a commitment as a new airplane program is to Boeing: we are betting the county’s future. It deserves some real planning.
* I know there is good work being done. It’s impossible to tell if it’s the most appropriate work or if the spending is appropriate because the basic planning elements aren’t visible. From my analysis, which I have shared with the water district, it doesn’t seem that we’re making the most appropriate decisions.
* I know everyone is thinking the LPP will bail us out. I would be happy if it could. I would like to place a friendly bet with you, one that may not be decided for years, that the Colorado River does not have the water for the LPP, even if we could afford to get it. We will need some very serious water conservation planning, the sooner the better. The first task is to set a goal based on what our likely water supply will be, and then plan how to get there. I am confident we can get there and still have a vibrant, growing community. I know you are not. We should prove it. It’s not that hard.

The table below is a one-directional accounting of the standard program planning elements to the latest water conservation plan contents, showing which standard elements are in the current water conservation plans. I have the other direction accounted too, and we can review that later.

Tom

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| --- | --- | --- |
| **Standard Planning Elements** | **Element Description** | **Accounting to Local Water Conservation Plans** |
| **Program plan** | A program is a very long-term management tool used to manage work. It derives projects, which do the work, initiates their planning and execution, and oversees their performance and accountability. Elements of the program plan are updated over time as new things are learned. |  |
| Program definition |  |  |
| Vision, mission | This sets the purpose of the program | Missing  |
| Goals and derivation logic | What the program is tasked to achieve, generally in abstract terms of “what” and “when” but they can be specific and measurable, including a description of how the goals were derived. | Goals are somewhat defined, but their derivation logic is not. This missing element is critical to any accountability. |
| Context and scope | Context describes the whole environment in which the program exists, and defines the subject of that environment that is the scope of the program. I’ve developed some charts of this for “water management”, which includes water conservation of M&I water, which seems to be the scope of the water conservation plans. I think the scope should be a bit bigger than that, but that’s something we can discuss. | Missing  |
| Constraints: time, budget, approvals/reviews | Could list what objectives should be accomplished by when, what yearly budgets should be assumed, what external processes (e.g., public engagement and reviews) must be followed, etc. | Missing  |
| Responsibilities, teaming, participation | The extended organization structure of the program team: who leads it, what is the external reporting, who should be involved in what. | Missing  |
| Program management practices | Defines how the program is to be managed in terms of accounting and disposition of ideas, audit practices, etc. Includes how project planning is initiated, how projects are initiated, how status is reported and completion is accepted. | Missing |
| Concepts for achieving goals  | This is the key technical part of program planning. Elements of the concepts are updated over time as new things are learned. |  |
| Strategies | Bid ideas for how to achieve the goals |  |
| Potential solutions and alternatives | The full set of ideas that will be examined to help achieve the program’s goals | CIRPAC did some of this, but it’s not in the plan |
| Evaluation methods and criteria | Describes how the ideas will be evaluated and what criteria will used, including prioritization criteria. | Missing  |
| Analysis of potential solutions and alternatives | The analysis of each idea, using the methods and criteria described above, resulting in eliminating some ideas, combining some, rating them in priority sequence, etc. | Missing  |
| Project definition | Packing the selected solutions into project via s synthesis of the analysis above. A program will have many projects, defined over years. Projects have a start & end. | Missing  |
| Objectives | Measurable achievement  | Missing |
| Deliverables | Specific product to be delivered | Missing |
| Budget |  | Missing |
| Constraints |  | Missing |
| Project phasing/sequencing | A simple network of project execution timing, some in series, some in parallel. These are updated over time as new things are learned, as projects are executed. | Missing  |
| **Project plan** | Created using the “project definition” information above. | Missing |
| Project responsibilities, teaming, participation | The internal organization structure for the project. May be very simple. Includes external participation. | Missing  |
| Task definition and sequencing | Tasks can have sub-tasks, each can have sub-tasks, each with a schedule and responsibilities, with precedent relationships defined. | Missing  |
| **Program and project accountability** | An accounting of program goals and project objectives in terms of time, achievements, budgets. | I derived a small part of the [accountability](https://conserveswu.org/wp-content/uploads/Water-Management-Plan-Project-Accounting-rev-1.xlsx) of all work done in the county since 2010, but most of the accountability information is missing. |

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| **Plan Element** | **Description** |
| Program Plan  | (Programs may be ongoing for many years.) |
| Introduction | This focuses the program elements on as narrow a purpose as possible which still addresses the core problem or opportunity |
| Vision and Mission | May seem superficial, but it focuses team members, especially members who come in later, on the purpose. |
| Goals | General, perhaps not quantifiable. May not be completely achievable in our lifetime (e.g., “racial equality”). A critical element because objectives, especially new or revised objectives, must be consistent.  |
| Objectives | Measurable. Like mileposts, however, expected to be passed by. |
| Responsibilities | Parcels out who has control over which elements. |
| Project Strategies | This section attempts to anticipate the projects that will be undertaken in the foreseeable future to progress toward the goals. It includes gross estimates of resources, time lines (which may overlap) and priorities. |
| Project Plan | (Projects have a beginning and an end.) |
| Project Definition and Introduction | From program plan above. |
| Tasks | Typically carried out in predefined sequence and often by different actors. It’s worthwhile highlighting when one task requires completion of a previous task or when tasks can be carried out simultaneously. Important to name responsibility, schedule, as well as resource and budgetary considerations. |
| Accountability/Verification | Evaluation part. Pre-determine how success will be measured. |
| Deliverable | CRITICAL! Specific as possible, because this determines when the task is complete. |

I think that the existing plans follow the state guidance, that everyone has good intentions, and that progress is being made. My only intent is to describe how more progress could be made, more effectively and efficiently, if we were to use standard program management processes employed throughout private industry, big and small. Using these processes would also make the planning much more transparent and invite more participation. Planning can be over-done, and it can be a waste if it is not really driving work.

My intent is not to point any fingers. I want to help you do something important. I’m ready for a quick review with your and/or your staffs anytime. I know you don’t have infinite time to spend on this, and that you don’t really know if it’s of value.

**Description of the analysis:**

This document contains a listing and comparison of general industry standard program/project plan contents to Utah state guidelines for Water Conservation Planning and the most recent Ivins, St George and WCWCD Water Conservation Plans.

This report does not mean to imply that the county and its cities have not been focused on conservation and have not made improvements. They have. And they have followed state guidance on water conservation planning.

**Summary of conclusions:**

1. The local water conservation plans, following the state’s guidance, contain almost none of the basic program planning and management element. They do, however, contain a lot of valuable information providing background for water management planning, but they do not contain the key elements required by normal, standard planning practices and could not result in executable plan to accomplish well-conceived objectives within a specified timeframe. That is not to say that such plans do not exist. Perhaps they are captured elsewhere and these documents are merely mislabeled “plans” instead of “water system description, environmental conditions and conservation concepts”.
2. The plans describe a lot of “sustaining activities”, which are conservation practices that can be voluntarily subscribed by the public, and which require annual budgets and educational activities. This is different from conservation projects which develop and implement a capability that directly results in a predictable outcome over a period of time. These projects appear to be largely or entirely missing in the plans. The tasks, schedules, budget and responsibilities for both sustaining and development projects are missing from the plans.
3. Another key missing element is the logic (strategies, concepts, selection criteria, analysis) used to select the projects to be executed. This is a critical element of planning.
4. The scope of the term “water conservation” is not well defined. Generally, “conservation” addresses reduction of humans uses of natural resources. “Water conservation” would therefore involve reducing human use of water, which would translate into reducing the demand for water, or GPCD (gallon per capital daily). However, both water supply and demand must be managed, and from an analysis of the [WCWCD’s accounting of money spent on “water conservation”](https://conserveswu.org/wp-content/uploads/Water-Management-Plan-Project-Accounting-rev-1.xlsx), it appears that both supply and demand improvement projects are included in accounting reports, and that both “sustaining activity” and actual projects are also accounted. This is appropriate for the full scope of “water management” since it would include both supply and demand improvements and both sustaining and project/development activity. However, this scope is larger than the term “water conservation”. The local water conservation plans and the state template reviewed in this paper do not clearly define their scopes. This may be just a simple terminology issue, but there is also a disconnect between the plans and the accounting.
5. While the scope of “Water Management” includes both supply and demand, it also includes all types, sources and uses of water: culinary and secondary, agriculture and M&I indoor and outdoor; diversions, depletions and reuse. The Water Management plan for the county would include all of these elements, the water conservation plans only include a portion of these types and uses. Where is the management of the others?
6. From that analysis of the accounting, it appears that far more money is being spent on the supply improvement than on demand improvement. While decreasing supply losses is important, decreasing demand is equally important. It appears to indicate an unbalanced water management plan. Proper planning would address this.
7. From that same analysis, it appears that many projects are indeed being executed, but none of those projects are visible in the Water Conservation Plans, and it isn’t clear that their executions were indeed properly managed by a project plan, and there is no visible accounting of project objectives to accomplishments or project budget to actual expenditures. It is not uncommon for project to miss their objectives or budgets, but without accountability to them, it is impossible to learn good lessons.

**Standard Program Planning and Management Elements**

**compared to**

**Contents of Local Water Conservation Plans**

|  |  |
| --- | --- |
| **Standard Planning** | **Local Water Conservation Plan** |
| **Program planning** |  |
| Program definition |  |
| Vision, mission | Missing  |
| Goal and derivation logic | Goals are somewhat defined, but their derivation logic is not. This missing element is critical to any accountability. |
| Context and scope | Missing  |
| Constraints: time, budget, approvals/reviews | Missing  |
| Responsibilities, teaming, participation | Missing  |
| Program management practicesDefines how the program is to be managed in terms of accounting and disposition of ideas, audit practices, etc. | Missing |
| Concepts for achieving goals  |  |
| Potential solutions and alternatives | CIRPAC did some of this, but it’s not in the plan |
| Evaluation methods and criteria | Missing  |
| Analysis of potential solutions and alternatives | Missing  |
| Project definition: solutions selection, project packaging and definition (objectives, deliverables, budget, constraints) | Missing  |
| Project phasing and sequencing | Missing  |
| **Project planning** |  |
| Project responsibilities, teaming, participation | Missing  |
| Task definition, sequencing, schedules, task responsibilities | Missing  |
| **Project initiation and execution**A description about how projects are initiated and monitored during execution | Missing |
| **Program and project accountability**An accounting of program goals and project objectives in terms of time, achievements, budgets. | I derived a small part of the [accountability](https://conserveswu.org/wp-content/uploads/Water-Management-Plan-Project-Accounting-rev-1.xlsx) of all work done in the county since 2020, but most of the accountability information is missing. |

**Details**

**Standard Planning and Management Elements**

|  |  |
| --- | --- |
| **Plan Element** | **Description** |
| Program Plan | This is the top-level planning instrument that directs all work to be executed by an enterprise. It captures the logic used to create the units of work (“projects”) that are to accomplish specific objectives that are on the strategic path for the enterprise. The program planning process directs the definition of projects and their sequencing, initiates project planning at the appropriate time for each project in sequence, approves project plans, initiates projects and approves their completion. It controls budgets and defines responsibilities. From the program plan, any independent party should be able to understand why certain work is being performed in a certain sequence using certain resources and budgets, and who is responsible and accountable. |
| Vision | May seem superficial, but it’s often where the team’s lack of common understanding is discovered. |
| Mission | Ditto |
| Goals | General, perhaps not quantifiable. A critical element. Must include the derivation basis |
| Objectives | Quantifiable. Optional at the program level |
| Context | Critical and often missing |
| Scope | Ditto |
| Responsibilities |  |
| Anticipated budgets over time | General expected budget levels over years |
| Project Strategies and Concepts  | This section includes all the information necessary to derive the projects to be undertaken. |
| Selection Criteria |  |
| Concept |  |
| Cost/benefit |  |
| Constraints |  |
| Priority |  |
| Project Definitions | The definitions of future projects mature as the current projects are executed, as program concepts mature, and as environmental conditions change. A large program may have definitions for many projects in different stages of maturity at different times. |
| Name and Description |  |
| Scope | Critical |
| Statement of Work | What the project is to do. |
| Objectives | Quantifiable, verifiable result expected when the project is executed. |
| Responsibilities |  |
| Budget | Targeted budget until the project is planned and started, when it is then committed. |
| Project Sequencing and Dependencies | The sequence and target timing for initiating project planning and execution |
| Project Plan | The program forms a project team at the appropriate time to plan the project using the project definition as a starting point. Draft plans are submitted for approval by the program manager. Once approved, the program initiates the project. |
| Project Definition | Copied from program plan above |
| Tasks |  |
| Name and description |  |
| Responsibility |  |
| Schedule  |  |
| Input and Output |  |
| Task Sequencing and Dependencies |  |
| Deliverable |  |
| Accountability/Verification | Description of how the project objective, schedule, budget, deliverables are to be accounted and verified. |

**A General Comparison of**

**Standard Plan Contents to Utah, WCWCD and City Water Conservation Plans**

|  |  |
| --- | --- |
| **Industry Standard Plan Contents** | **Map to Utah, WCWCD, city plans** |
| Program Plan |  |
| Vision | Missing |
| Mission | Missing |
| Goals | Included, but with no derivation basis |
| Objectives | Missing |
| Context | Missing |
| Scope | Missing, but perhaps could be derived |
| Responsibilities | Missing |
| Anticipated budgets over time | Missing |
| Project Strategies and Concepts  | Missing |
| Selection Criteria | Missing |
| Concept | Included, partially |
| Cost/benefit | Missing |
| Constraints | Missing |
| Priority | Missing |
| Project Definitions | Missing |
| Name and Description | Missing |
| Scope | Missing |
| Statement of Work | Missing |
| Objectives | Missing |
| Responsibilities | Missing |
| Budget | Missing |
| Project Sequencing and Dependencies | Missing |
|  |  |
|  |  |
| Project Plan | Missing |
| Project Definition (from Program) | Missing |
| Tasks | Missing |
| Name and description | Missing |
| Responsibility | Missing |
| Schedule  | Missing |
| Input and Output | Missing |
| Task Sequencing and Dependencies | Missing |
| Deliverable | Missing |
| Accountability/Verification | Missing |
|  |  |

**A Comparison of the DWRe Template to the Standard Plan Contents**

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| --- | --- |
| **Utah Water Conservation Plan Template** | **Map to Industry Standard** |
| Water System Description | Not an element of a plan |
| Water Problems, Conservation Measures and Goals | Could map to project strategies and concepts, and to program goals |
| Current Conservation Practices  | Not an element of a plan |
| Current Pricing Structure | Not an element of a plan |
| Addition Conservation Measures | Not an element of a plan |
| Cost Analysis | Maps to cost-benefit analysis |
| Implementing a Updating the Plan | Not an element of a plan |
| Appendices |  |
| Ordinance | Projects to define and implement ordinances are valid elements |
| Worksheets |  |
| Water System Profile | Could be part of the context/scope, but it incomplete |
| Identify Problems and Goals | Could map to project strategies and concepts, and to program goals |
| Current Conservation Practices | Not an element of a plan |
| Current Pricing Structure | Not an element of a plan |
| Additional Conservation Measures | Could be project concepts |
| Cost Analysis | Could be part of cost-benefit analysis |
| Implementation, Monitoring and Evaluation | Could be part of Accountability/Verification |

**A Comparison of the 2018 Ivins Water Conservation Plan to the Standard Plan Contents**

|  |  |
| --- | --- |
| **Ivins Water Conservation Plan** | **Standard Plan Contents** |
| Introduction |  |
| Description of the City | Not literally part of a plan. Could be a valid part of another system or background description document, used as input to the program planning. Ok to include in the program plan. |
| Water service area | Same as 1st comment |
| Population | Same as 1st comment |
| Estimated Growth | Same as 1st comment |
| State-wide Water Conservation | Same as 1st comment |
| Washington County Water Conservation | Same as 1st comment |
| Ivins Current Efforts | Would have been described in past project plans; ok to include |
| Current Achievements | Would have been described in past project plans; ok to include |
| Water Conservation Rates | Same as 1st comment |
| Other Factors Affecting Water Conservation | Same as 1st comment |
| Water Conservation Reduction Goal | Maps to Goals, a critical element, but derivation basis must be included. |
| Strategies | Could map to Strategies, but would need to be expanded to the derivation of projects; project definition and planning is missing |
| Appendices |  |
| A - Resolution | Not part of a plan, but ok to include |
| B – Public Notice | Ditto |
| C – Minutes of Public Hearing | Ditto |
| D – Existing Ordinances | Would have resulted from executing projects to define and implement ordinances |
| Limits on water use | Ditto |
| Waste not permitted | Ditto |
| Overflowing water | Ditto |
| Landscaping | Ditto |

**A Comparison**

**of the 2013 St George Water Conservation Plan to the Standard Plan Contents**

**(not that the 2018 version of the plan has the same structure and therefore the same issue)**

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| --- | --- |
| **2013 St George Water Conservation Plan** | **Standard Plan Contents** |
| Water System Overview | Would be part of context/scope |
| Current Water Use | Not literally part of a plan. Could be a valid part of another system or background description document, used as input to the program planning. Ok to include in the program plan. |
| Existing Water Sources | Same as 1st comment |
| Projected Water Needs | Same as 1st comment; could feed Goals |
| Current Conservation Efforts | Same as 1st comment |
| System Improvements | Same as 1st comment |
| Conservation Goals | Maps to Goals |
| Pricing Structure | Same as 1st comment |
| Water Conservation Policies/Ordinances | Would have resulted from executing projects to define and implement ordinances |
| Water Conservation Coordinator | Related to definition of responsibilities, although responsibilities are not clearly defined |
| Conclusion |  |
| Water Conservation Reduction Goal | Maps to Goals, a critical element, but derivation basis must be included. |
| Appendices |  |
| A -  |  |
| B – Facts on Red Hills Desert Garden | Would have been part of the project that developed the garden |

**A Comparison**

**of the 2015 WCWCD Water Conservation Plan to the Standard Plan Contents**

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| --- | --- |
| **2015 WCWCD Water Conservation Plan** | **Standard Plan Contents** |
| Introduction | Would be part of context/scope |
| Current Water Supply | Not literally part of a plan. Could be a valid part of another system or background description document, used as input to the program planning. Ok to include in the program plan. |
| Water Conservation Achievement, Activities and Current Practices | Same as 1st comment |
| Future Water Resources and Demand Projections | Same as 1st comment; could feed Goals |
| Water Conservation Recommendations and Goals | Maps to Goals |
| Conclusion | Same as 1st comment |
| Glossary |  |
| Abbreviations and Acronyms, Appendix |  |
| List of Tables |  |
| List of Figures |  |