

## **Background Information**

### **Development of Water Quality Standards for Willard Spur**

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Utah Department of Environmental Quality, Division of Water Quality

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The objective of this memorandum is to encapsulate available information regarding the work that has and is being completed by the Utah Department of Environmental Quality, Division of Water Quality (DWQ) to characterize and protect the Willard Spur ecosystem. Much of the available information is available on the project Web site ([www.willardspur.utah.gov](http://www.willardspur.utah.gov)). Direct links to supporting documents are provided throughout this document.

## **Background**

Construction of the Perry/Willard Regional Wastewater Treatment Plant (PWRWTP) was completed in 2010. DWQ received numerous comments as part of the public notice process for the PWRWTP's Utah Pollution Discharge Elimination System (UPDES) discharge permit to Willard Spur. Many of these comments expressed concern over the potential impact that the effluent could have on the water body and petitioned DWQ to prohibit all wastewater discharges to Willard Spur or to alternatively reclassify Willard Spur to protect the wetlands and current uses of the water.

Although the Utah Water Quality Board denied the petition, the Water Quality Board directed DWQ to develop a study designed to establish defensible protections (i.e., site-specific numeric criteria, antidegradation protection clauses, beneficial use changes, etc.) for the water body. The Water Quality Board also directed DWQ to pay for phosphorus reductions at the PWRWTP while the study is conducted. This path forward, developed in conjunction with stakeholders, allows the PWRWTP to operate while the studies are underway, with reasonable assurances that the effluent will not harm the ecosystem.

## **Timeline**

October 2007	DWQ recommended that the cities of Perry and Willard jointly move ahead with construction of a regional wastewater treatment plant and abandon existing lagoons.
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December 16, 2008	The cities of Perry and Willard obtained \$28 million in funding from DWQ to build the PWRWTP.
May 2010	DWQ issued public notice for the UPDES permit for the PWRWTP to discharge effluent to Willard Spur.
June 10, 2010	Western Resource Advocates submitted petition to DWQ to change rules; added Willard Spur as a Category 1 water; changed the classification of Willard Spur uses to 2B, 3B, and 3D; and nominated Willard Spur as an Outstanding National Resource Water.
June 20, 2010	Construction of the PWRWTP was completed.
August 25, 2010	Utah Water Quality Board denied petition from Western Resource Advocates and recommended further study.
October 5, 2010	First meeting of Willard Spur Workgroup (representing stakeholders) occurred.
October 20, 2010	Utah Water Quality Board approved measures that addressed the cities' hardships, provided for short-term operation of the PWRWTP while protecting Willard Spur, and completed studies to determine permanent protective measures for Willard Spur.
December 16, 2010	Willard Spur Workgroup voted to dissolve the Workgroup and create a Steering Committee and Science Panel to develop and conduct the studies required to determine permanent protective measures for Willard Spur.
January 18, 2011	Memorandum of Understanding was signed between DWQ and the U.S. Fish and Wildlife Service (USFWS) outlining terms of agreement for issuing a discharge permit to the PWRWTP and completing required studies.
January 20, 2011	Willard Spur Steering Committee had first meeting.
February 22, 2011	The PWRWTP's UPDES discharge permit was approved.
March 7, 2011	The PWRWTP began discharge to Willard Spur.

## Relevant Documents

A summary of and links to relevant documents are provided as follows.

### Petition to Water Quality Board

This is the original petition from Western Resource Advocates – on behalf of the Utah Waterfowl Association – to prohibit all wastewater discharges to Willard Spur or to alternatively reclassify Willard Spur to protect the wetlands and current uses of the water.

[http://www.willardspur.utah.gov/documents/PetitionWQB08-25-10\\_Tab\\_3.pdf](http://www.willardspur.utah.gov/documents/PetitionWQB08-25-10_Tab_3.pdf)

### DWQ memorandum August 11, 2010

This memorandum from DWQ staff recommended that the Water Quality Board not approve the petition from Western Resource Advocates on the basis of insufficient data, provided a summary of categories for Utah waters and the beneficial uses as they pertain to Willard Spur, referenced from regulations supporting this summary, and a recommended a path forward. Additional analyses were recommended with a recommendation for further research studies if initial analyses indicated that Willard Spur may be at risk from the proposed discharge.

[http://www.willardspur.utah.gov/documents/DWQ\\_Memo\\_8\\_11\\_2010.pdf](http://www.willardspur.utah.gov/documents/DWQ_Memo_8_11_2010.pdf)

### DWQ Memorandum September 6, 2010

This memorandum from DWQ staff compared the PWRWTP effluent to other publicly owned treatment works (POTWs) with similar treatment processes to determine if projected nutrient concentrations for the PWRWTP's effluent are reasonable. Projected concentrations were deemed to be too low.

[http://www.willardspur.utah.gov/documents/DWQ\\_Memo\\_9\\_6\\_2010.pdf](http://www.willardspur.utah.gov/documents/DWQ_Memo_9_6_2010.pdf)

### DWQ Memorandum September 30, 2010

This memorandum from DWQ staff summarized the methodology used and results of a simplified mixing analysis conducted to estimate nutrient concentrations in the waters of Willard Spur resulting from the proposed discharge from the PWRWTP. In short, the analysis showed that effluent could degrade water quality if Willard Spur did not experience full flushing flows.

[http://www.willardspur.utah.gov/documents/willard\\_spur\\_TM1\\_final\(2\).pdf](http://www.willardspur.utah.gov/documents/willard_spur_TM1_final(2).pdf)

### DWQ Memorandum October 12, 2010

This memorandum from DWQ staff addressed the hardship experience by the cities due to the inability to operate the PWRWTP. The memorandum recommended (1) reconsideration of loan terms to account for delay, (2) DWQ funding for engineering and construction of nutrient-removal facilities at the PWRWTP and their operation until permanent protective measures for Willard Spur are determined, (3) approval of UPDES discharge permit that limits nutrient load, and (4) completion of studies required to determine permanent protective measures for Willard Spur.

[http://www.willardspur.utah.gov/documents/DWQ\\_Memo\\_10\\_12\\_2010.pdf](http://www.willardspur.utah.gov/documents/DWQ_Memo_10_12_2010.pdf)

### DWQ Memorandum October 13, 2010

This memorandum from DWQ staff provided a summary of a preliminary ecological evaluation of Willard Spur using a draft assessment framework developed for the impounded wetlands of Great Salt Lake (GSL). The evaluation suggested that Willard Spur could be threatened by the proposed discharge; however, little threat is expected in the first 5 years if effluent volume and nutrient concentrations are limited. Thus, studies could be conducted to determine protective measures during this 5-year period.

[http://www.willardspur.utah.gov/documents/TM\\_10\\_13\\_2010.pdf](http://www.willardspur.utah.gov/documents/TM_10_13_2010.pdf)

## Memorandum of Understanding January 18, 2010

This memorandum of understanding between DWQ and USFWS summarized the following key points of agreement: (1) the PWRWTP's discharge is outside of the boundaries of Bear River Migratory Bird Refuge, (2) agreement with concept of and participation in Willard Spur Steering Committee, (3) DWQ will conduct monitoring to evaluate impact of the PWRWTP effluent on Willard Spur, (4) DWQ will develop site-specific water quality standards for Willard Spur, (5) DWQ will pursue funding for studies and share data, and (6) DWQ will issue a UPDES discharge permit to the PWRWTP with a prescribed precautionary approach.

[http://www.willardspur.utah.gov/documents/DWQ-FWS\\_MOU\\_RE-Willard\\_Spur.pdf](http://www.willardspur.utah.gov/documents/DWQ-FWS_MOU_RE-Willard_Spur.pdf)

## Program Objective

The overall objective of the proposed Willard Spur research program is to answer the question posed by the Water Quality Board:

*What water quality standards are appropriately protective of beneficial uses of Willard Spur waters as they relate to the proposed POTW discharge?*

Many questions will need to be answered to answer this question; most of which will be answered in during the research studies to be completed in the years 2012 to 2014. Our primary goal this fall (2011) is to identify and define these studies.

Note that a preliminary list of research questions was developed in February and were included in handouts provided to the Steering Committee on February 17, 2011. See the following link for a copy (Page 13):

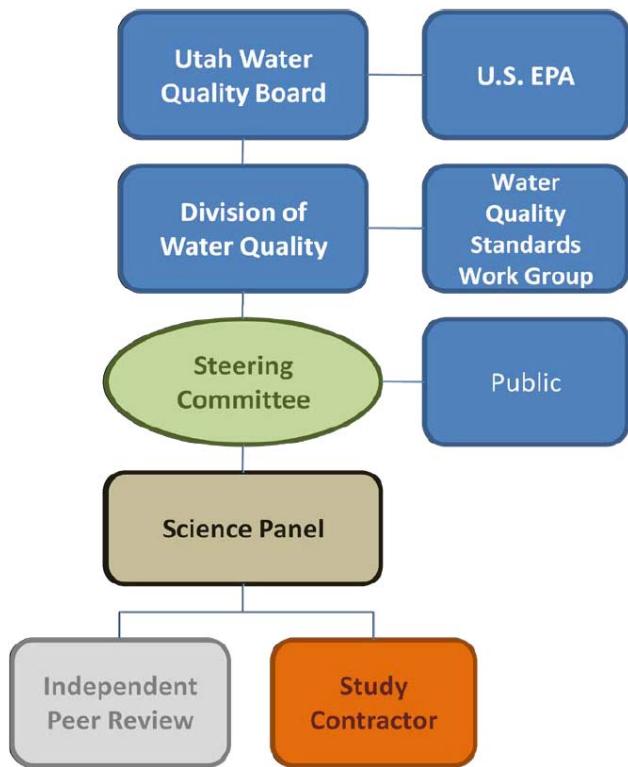
[http://www.willardspur.utah.gov/documents/SC021711/Handouts\\_2\\_17\\_11.pdf](http://www.willardspur.utah.gov/documents/SC021711/Handouts_2_17_11.pdf)

## General Approach and Phasing

DWQ developed an approach with the Willard Spur Workgroup to develop and complete the studies required to determine if and what changes should be made to water quality standards to protect Willard Spur. This section provides a summary of the project organization, approach, and phasing.

## Organization

Critical to the success of this approach is the involvement of a Steering Committee and Science Panel to provide input, guide research, and provide recommendations to DWQ. DWQ will facilitate the process, work with the Water Quality Standards Workgroup (another venue soliciting stakeholder and public input), and provide final recommendations to the Utah Water Quality Board. The Utah Water Quality Board holds the authority to make any changes to Utah water quality rules and regulations. See Figure 1 for an illustration of how the various decision making bodies are organized.



**FIGURE 1**  
*Organizational Chart*

## Steering Committee

The Steering Committee is charged with the responsibility to guide the process of developing and, in the end, provide recommendations to DWQ for site-specific water quality standards – or other appropriate water quality regulations – for Willard Spur that are protective of its beneficial uses and sustain the natural resources of GSL and its associated wetlands. One of the functions of the Steering Committee is to actively engage the public to solicit their involvement and input. Walt Baker/DWQ is serving as the Steering Committee chair. More information on the Steering Committee's charter, membership and activities in 2011 is found at <http://www.willardspur.utah.gov/committee/index.htm>.

## Science Panel

The Science Panel is charged with the responsibility to advise DWQ and the Steering Committee regarding regulatory and technical considerations related to the development of water quality standards for Willard Spur. Jeff Ostermiller/DWQ will serve as the Science Panel chair. More information on the Science Panel's draft charter and membership is found at <http://www.willardspur.utah.gov/panel/index.htm>.

### **Independent Peer Review**

DWQ proposes to work with the Science Panel to identify scientists who are independent of this program to serve in a peer review capacity. The objective is to provide an additional means to improve upon the quality and defensibility of the work to be done.

### **Study Contractors**

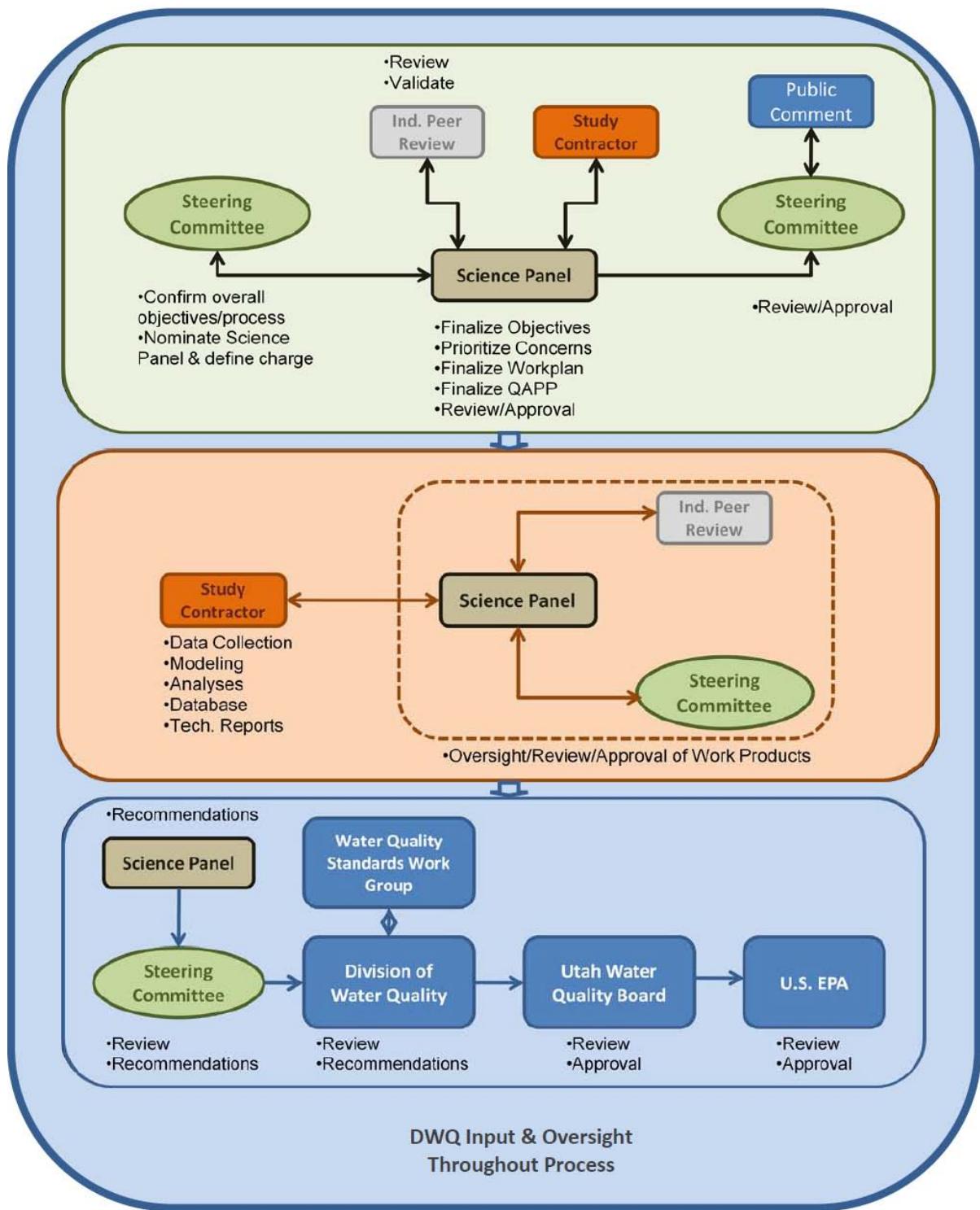
DWQ will work with the Science Panel to identify and select scientists who can assist with the completion of identified research. It is assumed that DWQ will assume the lead in field sampling efforts, but some efforts may also need to be completed by study contractors.

### **Approach and Phasing**

The proposed approach for this program is divided into the following three phases extending through the years 2011 to 2014:

1. Development and planning for research studies (2011)
2. Implementation (2012 to 2013)
3. Evaluation and Recommendations (2014)

Sampling activities in 2011 are also being completed as part of Phase I and are described further later in this memorandum. Figure 2 illustrates the proposed approach and interactions.



**FIGURE 2**  
*Proposed Approach for Willard Spur Research Program*

## 2011 Sampling Activities

An essential element in the development of an effective research program is baseline information that can better inform the questions that must be answered. Unfortunately, very little information exists regarding the water quality, habitat, and use of Willard Spur. As requested by the Steering Committee (and included as part of the Memorandum of Understanding between DWQ and USFWS), DWQ identified monies and prepared a sampling plan to address the following two objectives:

1. Provide at least one data point describing the present characteristics of the effluent from the City of Willard's lagoon system, its outfall channel, and mixing zone in Willard Spur before the new Plant begins operation
2. Provide background information describing the overall condition and function of Willard Spur that can serve as the basis for a proposed Science Panel to make recommendations for the studies requested by the Water Quality Board

Initial sampling efforts were discussed with the Steering Committee prior to beginning in February 2011. The sampling plan was subsequently written and accepted by the Steering Committee in April 2011. As conditions have warranted, DWQ has adapted its methods to best meet project objectives and informed the Steering Committee of changes. The 2011 Sampling Plan may be found at:

<http://www.willardspur.utah.gov/documents/WillardSpur2011samplingplan.pdf>