



**Moab City
Water Conservation and Drought Management Advisory Board
Regular Meeting
217 E. Center Street
Wednesday, October 10, 2018**

**REGULAR MEETING AGENDA
2:00 PM
City Council Chambers**

1. Call to Order
2. Approval of Minutes of September 12, 2018 meeting
3. Citizens to be Heard
4. Nominations of Lynch and Bailey for reappointment (Action Item)
5. Debrief of Council Presentation
6. Board member and staff reports regarding various recent meetings
7. Meeting schedule for remainder of year (Action Item)
8. Other Business
9. Future Agenda Items
10. Adjournment followed by Field Trip with Ken Kolm

In compliance with the Americans with Disabilities Act, individuals needing special accommodations during this meeting should notify the Recorder's Office at 217 East Center Street, Moab, Utah 84532; or phone (435) 259-5121 at least three (3) working days prior to the meeting. Check our website for updates at: www.moabcity.org

MOAB CITY
WATER CONSERVATION AND DROUGHT MANAGEMENT ADVISORY BOARD
REGULAR MEETING MINUTES--DRAFT
September 12, 2018

Regular Meeting & Attendance: The Moab City Water Conservation and Drought Management Advisory Board held its Regular Meeting on the above date in the Council Chambers at the Moab City Center, located at 217 East Center Street, Moab, Utah. Due to technical difficulties, there is no recording of the meeting.

Regular Meeting Called to Order: Board Chair Arne Hultquist called the Meeting to order at 2:00 PM. In attendance were board members Kyle Bailey, Kara Dohrenwend, John Gould, Denver Perkins and Jeremy Lynch. Board member Mike Duncan was absent. Also in attendance were Assistant City Engineer Eric Johanson, Project Specialist Eve Tallman and one guest.

Approval of Minutes: Dohrenwend moved to approve the minutes of the August 8, 2018 meeting. Bailey seconded the motion. The motion carried 6-0 aye, with Board members Bailey, Perkins, Hultquist, Lynch, Dohrenwend and Gould voting aye.

Citizens to be Heard: Melissa Byrd spoke about the High-Density-Housing (HDH) Overlay District proposed by the County. She stated she is a member of the school board, which has been asked to write a letter of support for the HDH Overlay. She wanted input and information so that she could advise the school district. It was explained that the Board had sent a letter to City Council regarding concerns about increased density without adequate planning for water supply and infrastructure. It was noted HDH would be considered in a public hearing of the County planning commission. Byrd also asked about the Community Reinvestment Agency (CRA) and Tallman explained the Water Board has not considered this topic. The CRA is a revenue-generating mechanism designed to redirect property taxes from the proposed Utah State University campus area for the development of infrastructure in that area.

Planning Discussion for the Board's Annual Report to the Council: The draft written report was reviewed with a few edits. It was determined that the Quick Reference Guide would be included for Council review. The outline for the presentation was revised. Hultquist will plan to present the report with as many other members of the board present as possible.

Irrigation Educational Information: Board members agreed that the lawn card is fine and there are a couple of edits for the other card. Dohrenwend agreed to work with Dr. Russo to complete the card. It was requested that the logo for Wildland Scapes be removed, and a link to the water data would replace it.

Board Member and Staff Reports: Bailey reported on the success of the recent field trip to Johnsons Up On Top with several officials and Ken Kolm. Tallman agreed to reach out to Dr. Kolm to gauge his interest in a field trip with the Water Board for the November 14 meeting. Johanson provided an update on the United States Geological Survey (USGS) report. Dohrenwend noted there was not a substantive executive summary in the draft report. Hultquist mentioned his interest in attending a water workshop in Grand Junction.

Future Agenda Items: Discussion regarding water conservation messages on City water bills, nominations for reappointment to the Board for Lynch and Bailey and potential cancellation of December meeting.

Adjournment: Dohrenwend moved to adjourn the meeting. Duncan seconded the motion. The meeting was adjourned at 3:50 PM.



Moab Water Conservation and Drought Management Advisory Board Annual Report to Moab City Council 2018

Background and Membership:

The Moab Water Conservation and Drought Management Advisory Board (Water Board) was established by Ordinance 2017-09 by the City Council, based on recommendations set forth in the Council-approved Moab Water Conservation and Drought Management Plan Update of 2016 which also recommended the creation of the Sustainability Director position.

The Council confirmed the inaugural appointment of five City residents recommended by Mayor David Sakrison. The original membership included Arne Hultquist, Kara Dohrenwend, Jeremy Lynch, Kyle Bailey and Sarah Sidwell. Later, Mike Duncan was appointed and Sidwell moved from the City limits and relinquished her position on the board.

In March of 2018 the Bylaws were amended and ratified by Council to include one position on the seven-member board which did not have a City residency requirement if the candidate resided within the watershed area. After that action, Grand County resident John Gould was appointed to the Board, as well as Denver Perkins, a City resident.

City staff who regularly attend Water Board meetings and work on projects with the Board include Sustainability Director Rosemarie Russo, Assistant City Engineer Eric Johanson and Records/Project Specialist Eve Tallman, who serves as the Board Secretary. Public Works Staff members Levi Jones, LeighAnne Reinhart and Pat Dean also attend selected meetings.

Mission and 2017 Goals:

Early on, the Board established bylaws and a mission statement:

It is the mission of the Moab Water Conservation and Drought Management Advisory Board to advise the Moab City Council on policies and practices to ensure a quality water supply for current and future residents of Moab.

The Goals adopted for 2017 included:

- Review the current Water Conservation Plan for corrections and improvements.
- Discuss the purposes of water conservation, and the appropriate buffers needed for hardened water demand [demand hardening refers to perceived basic water needs, as opposed to “discretionary water use,” such as landscaping].
- Review the impact of outdoor water use on Moab’s culinary water supply.
- The role of trees, lawns, and other landscaping in a water conservation program.
- Educational and public information efforts.
- Drought management.
- Participation in the Groundwater Management Plan process being conducted by the Division of Water Rights, including consideration of closing the aquifer and consideration of recharge rate.
- Flood Control as part of the General Plan review.
- Stormwater Management.
- Engagement with the City’s expert staff.
- Review the Water Rate Schedule and water usage by type.

- The role of Transient Room Tax revenues to compensate for impacts of tourism on water infrastructure.

2017 Activities:

During the past year, the above topics as well as the following have been discussed in Water Board meetings: Manti-La Sal National Forest Management Plan revisions; City’s riparian plan; water supply and production compared to Moab’s paper water rights; accuracy of water meters in the City and County; sunset of the debt for Ken’s Lake; United States Geological Survey (USGS) Groundwater Study; 5,000 Acre-Foot (AF) water rights request made by San Juan Spanish Valley Special Service District, and injection wells as a possibility for Mountain View overflow. The development of new culinary wells and the review of water source protection zones have been a concern of the Board, as well as the *E. Coli* outbreak in Mill Creek and the use of culinary water to irrigate the baseball fields near the Spanish Valley Arena. The new Water Reclamation Facility (WRF) and recharging the wetlands has been a topic of interest, along with in-line micro-hydro power turbines as a mechanism to defray electrical costs at the WRF.

Due to the preponderance of complex and varying facts and figures in the discussion of water supply and demand, Water Board members and staff compiled a Quick Reference Guide for public use. Drs. Ken Kolm and Paul van der Heijde met with the Water Board to discuss their report to the City on the Hydrogeologic and Environmental System Analysis of Moab City’s springs and wells. The Board sent questions and feedback on the report to Kolm and City Engineer Chuck Williams.

Members of the Board, along with Council members and staff, attended the Southeastern Utah Water Workshop last October. The closing comments of State Engineer Kent Jones at the conference were influential to the Board. After an audience member brought up the assertion that climate change could deplete water supply by up to 30 percent, and that our local area is already at the limit of safe yield, he stated that he is not optimistic about the future of Moab’s water supply.

2018 Goals and Activities:

The 2018 Goals for the Water Board are as follows:

- 1) Advise City Council and staff to ensure the City can secure quality water and a sufficient quantity of water required for buildout.
 - A) Ensure we understand Moab’s water system and have accurate data in order to assist City Council and staff with such projects as a groundwater monitoring effort and the upcoming Groundwater Management Plan, as well as other numerical goals, from a science-based position and as a reliable partner in regional water management.
 - B) Provide guidance around management of Moab’s water rights and ensure we have sufficient rights and production capacity for current and future residents of Moab.
- 2) Advise City Council and staff on water protection, including sole source protection and watershed management.
- 3) Advise City Council and staff on water management priorities and strategies to inform municipal planning for stormwater and other infrastructure developments.

Action Items:

In the past 12 months, the Water Board has voted upon and taken the following actions:

- 1) Recommended to the City to draft a Memorandum of Understanding regarding an upgrade and shared costs for stream gauges to more accurately measure water supply and diversions from Mill Creek.
- 2) Recommended to Council to draft a resolution to limit new water right appropriations.

- 3) Recommended to Council to discuss water resources with the County Council in view of proposed increased density and buildout.
- 4) The Board recommended the City hire a water rights attorney.
- 5) In collaboration with the local League of Women Voters, the Board and staff hosted an open house to share information about such things as water supply, irrigation, and the ongoing Division of Water Rights adjudication process in the area.
- 6) The Board reviewed a grant application for a turnout (river pumping) station.
- 7) Staff researched new water right allocation requests to determine possible impacts on the City's water supply.

In addition, Rosemarie has accomplished the following water-related actions:

- 1) Honored a request from Grand Water and Services Agency (GWSSA) to collaborate on an educational effort aimed at residential, commercial and industrial users.
- 2) Launched a Lead By Example program for City facilities and water conservation which will include an internal audit of use.
- 3) Initiated the Green To Gold program for local businesses that includes water conservation requirements, in which 20 companies have enrolled.
- 4) In collaboration with the Board and Kara Dohrenwend in particular, drafted a recommended irrigation table for lawns and landscaping.
- 5) Distributed water conservation signs and door hangers to hotels.

Top Three Concerns of the Water Board:

The Water Board presents to Council and City staff its top three enduring concerns:

- 1) The available quantity of water.
 - a) Implications of the proposed Regional Groundwater Management Plan and the ongoing adjudication process;
 - b) The forthcoming USGS report which will likely show a vastly reduced water supply compared to historical understanding; and
 - c) The water budget consulting work of Ken Kolm and Paul Van der Heijde.
- 2) The importance of a water audit. Rosemarie has begun a process to evaluate the City government's own consumption, along with other institutional, commercial, and residential use.
- 3) A public information effort about efficient water use and wasteful practices, including part-time residents and increasing demand, regulations for hotels regarding water use for landscaping, pools, and lawns, and updating the City's General Plan to reflect new information regarding water supply and buildout. Toward this end, Dr. Russo has already distributed more than 50 aerators and other water saving devices to local hotels.

MOAB WATER FACTS

City of Moab Water Conservation and Drought Management Advisory Board

October 2018

Current estimate of production potential:

Moab City: 5,401 AF**
GWSSA: 3,940 AF*** (potential was reported as 9,444 AF but they only have 3,940 AF of water rights)
SJSVSSD: 0 AF*
GCWCD & MIC at Sheley Tunnel: 2,500 AF*
MIC Lower Diversions: 1783 AF ****
Private Wells: 400 AF *
Total current production potential = 14,024 AF

According to the United States Geologic Survey (USGS) Draft Groundwater Study, the amount of Groundwater Available for sustainable use is 10,100 to 15,100 AF (USGS Study 2017, this includes both the Valley and Glen Canyon Group Aquifer)

Current estimate of Water requirements:

Moab City estimate at build out: 9434 AF***
GWSSA estimate by 2060: 1550****
SJSVSSD estimate by 2060: 500* (5000 if full rights are developed as stated in the SJSVSSD 40-year water right plan)
GCWCD & MIC at Sheley Tunnel if use stays the same: 2,500 AF *
MIC Lower Diversions if use stays the same: 1783 AF ****
Private Wells if use stays the same: 400*
Total Current estimate of water requirements = 16,167 AF

Estimates of current groundwater use:

Moab City: 2283 AF **
GWSSA: 830 AF***
SJSVSSD: 0
Private Wells: 400 *
GCWCD & MIC at Shelley Tunnel: 2,500 AF *
MIC Lower Diversions: 1783****
Estimated total amount of groundwater currently being used= 7,796

Sources:

- * Utah Division of Water Rights
- ** Moab City 2016 Water Conservation Plan
- *** GWSSA 2014 Water Conservation Plan
- **** Moab Irrigation Company 2017 Water Distribution Plan

Estimates for Use:

single-family home with landscaping = 1.0 AF per year
condominium without landscaping = .45 AF
seasonal cabin without landscaping = .25 AF
hotel room = .36 AF

Overall Moab Usage:

Residential 50%
Nightly Accommodations 16%
Other commercial and Institutional 17%
Cemeteries & Parks 3%
Water Loss 6%
Other 8%

Conversions and Acronyms:

AF = Acre Foot or Acre Feet

1 AF = 325,851 gallons

cfs = cubic feet per second

1 cubic foot = ~7.5 gallons

1 cfs/year = 236,000,000 gallons

1 cfs/year = 724 AF

GWSSA = Grand Water and Sewer Service Agency

SJSVSSD = San Juan Spanish Valley Special Service District

UDWRi = Utah Division of Water Rights

GW = Groundwater

GCWCD = Grand County Water Conservancy District

MIC = Moab Irrigation Company

TNC = The Nature Conservancy

GCA=Glen Canyon aquifer

VF=Valley Fill aquifer

Common Household Uses of Drinking Water (Gallons per Capita per Day)

Bathing: 20
Toilet Flushing: 24
Lawn Watering and Pools: 25
Laundry: 8.5
Dishwasher: 4
Car Washing: 2.5
Drinking and Cooking: 2
Garbage Disposal: 1

Wastewater Treatment Quick View

Current plant averages 1 Million Gallons per Day (MGD)
New Water Reclamation Facility (WRF) will have a capacity to process 1.7 MGD.
Current plant uses 2 Million Gals of water per month.
New WRF is estimated to use 300,000 Gals of water per month.

Moab Area Water Rights Overview

Paper Groundwater Rights:

Moab City: 10,091 AF ** (others have calculated it at 9440 and 9658)

GWSSA: 3940 AF ***

SJSVSSD: 500 AF *(Currently they have approval for 500 AF but their water right appropriation is pending for 5,000 AF)

Estimated private well water rights currently being used: 400 AF*

Estimated surface water rights that are “base flow” or groundwater:

GCWCD & MIC @ Sheley Tunnel: 2,500 AF*

MIC Lower Diversions: 1783 AF ****

Total amount of groundwater currently considered appropriated:

Paper water rights (14,931 total) + base flow rights (4,283) = 19,214 AF

Other Water Rights Details

Spanish Valley is currently closed to new appropriation of surface water *

Current Spanish Valley groundwater appropriation limit is 6.73 AF *

Spanish Valley groundwater is open to transfer appropriations *

The adjudication process currently being administered by the Division of Water Rights will be ongoing for at least one year.

Did You Know?

Water use in the US has not correlated proportionally to total population. Agriculture and industrial uses account for the biggest withdrawals; withdrawals for domestic use amount to only 11%. There is a great deal of regional variation. Irrigation is largely a western phenomenon, which increases the per capita withdrawals.

Groundwater and surface Water Interaction: Many large aquifers have been exploited at rates far exceeding recharge rates. In these cases, municipalities and water supply organizations have been forced to turn to alternative freshwater supplies. Decisions need to be made about managing existing aquifers, especially to coordinate groundwater and surface water withdrawals.

Water Resources Key Terms

Administered water systems: Most of the rivers in the West were fully appropriated by the end of the nineteenth century leading most Western states to manage water systems (i.e. dams, canals) through “administered” systems. These systems refer to public agencies involved in regulating surface water use.

Average-cost pricing: Revenue to cover costs of production so that general tax revenues do not need to be used. The total costs of delivering water are divided by the quantity of water delivered, and the unit water price.

Declining block pricing: Uses two pricing mechanisms – one for the first quantity of water and a second price for higher consumption rates.

Discharge: Gaining Streams; Springs and Seeps; Wells; Waste Water Treatment Plants

Flow System: bedrock controlled by topography, degree of dissection, continuity, and hydro structures; and alluvium controlled by collapsed anticlines/graben hydrostructures, topography, dissection, continuity, and deposit thickness.

Freshwater: Most of the water on earth is salty. Much of the global supply of freshwater is locked up in glaciers, ice caps, and elsewhere. This means that freshwater supplies for humans and ecosystems must come from the relatively small amounts that run off as surface water or are contained in accessible groundwater aquifers.

Groundwater: The law of groundwater resources is different from, but related to, surface water rights. Groundwater is extracted from underground aquifers, the geohydrological characteristics of which vary widely. Recharge rates can vary from year to year and by the surrounding formations. In many cases, they are hydrologically interconnected to surface water resources, recharging from and discharging to water in streams and lakes.

Instream flow protection: Relatively new principle that balances traditional demands for water withdrawals with services such as boating, fishing, ecosystem protection and scenic values.

Riparian water rights: Stems from the Latin word *riparius*, meaning, “situated on the banks of a natural watercourse or body of water.” It was used in the East, where water is abundant and derived from English legal doctrine. By this doctrine, the rights to use water (other than for irrigation, which was reserved to the government) belonged to the people who owned the banks of the streams or lakes.

Prior appropriation water rights: Essentially gives water rights to the first person who appropriates it and makes beneficial use of it. It is sometimes called “first in time, first in right.” While riparian water law tends to arbitrate right holders as equal in status, prior appropriation creates primacies such as that first users have rights that take precedence over those coming later. It was developed because of the arid climate in the West. The first user is referred to as a senior right holder. Later users known as junior rights holders can gain access to the portion of the water not used by senior holders. Appropriation water rights are also “use it or lose it” rights. The rights exist only so long as the water is actually used; if use stops, the right is lost.

Per capita domestic supply: is the sum of public supply and domestic self-supply in relation to the population. U.S. domestic use averaged 123 gallons per person per day in 1960, 163 gallons in 1980, 164 in 2000 and 320 in 2016.

Recharge: Infiltration of Precipitation; Losing Streams; Subregional Flow from Bedrock to Alluvium and Glacial Materials; Site Flow from Eolian, Alluvial and Glacial Materials to Bedrock; Site Flow from Irrigation.

Safe yield: the amount of water that can be withdrawn from an aquifer without significant ecological impacts, which could result from reductions in streamflow where groundwater discharge to the stream provides baseflow. If the amount of groundwater withdrawn exceeds the safe yield amounts, the well can go dry. **Safe yield** is generally considered equal to the average replenishment rate of the aquifer from natural and artificial recharge.

Surface Water: Streams, lakes and rivers

Third-party effects: a person who is affected by water right transfers but is not part of the agreement (i.e., downstream user)

Water markets: generally involves buying irrigation rights through private agreements

Water withdrawals/consumption: Groundwater typically falls in the category of open-access resource, but in the West, groundwater laws tend to be consistent with prior appropriation. Groundwater management areas may be empowered to set and enforce rules, such as permitting, well spacing, well construction standards, allocation preferences, limited pumping rates, restrictions on place of use and water monitoring and reporting.