



# ***Water Data for the Nation***

## ***New monitoring location pages***

### ***Streamflow Information Collaborative presentation***

**Jim Kreft**

**USGS Water Mission Area**

**Web Communications Branch**

**February 11, 2019**

# Background

## Motivation

- NWISWeb launched first real-time data pages in 1995.
- In 2018, more than 7 million annual unique visitors, billions of successful page requests, and terabytes of data delivered.
- Real-time data pages draw 98% of web traffic.
- Significant risks associated with NWISWeb6 have triggered a modernization effort.
- USGS and WMA-wide modernization of web-based information delivery and communications:
  - Discoverable, mobile-ready, contemporary design, accessible, and with integration across platforms.
- IDEA Act- December 2019- Standards-based, mobile-first federal web presence



USGS Current Conditions for U x +  
https://waterdata.usgs.gov/nwis/uv?site\_no=09380000

**USGS**  
science for a changing world

**National Water Information System: Web Interface**

Data Category: Current Conditions Geographic Area: United States GO

\* We've detected you're using a mobile device. Find our [mobile dedicated web site here](#).

Click to hide News Bulletins

- [Please see news on new formats](#)
- [Full News](#)

**USGS 09380000 COLORADO RIVER AT LEES FERRY, AZ**  
**PROVISIONAL DATA SUBJECT TO REVISION**

Available data for this site Time-series: Current/Historical Observations GO

Click to hide station-specific text

**Station operated in cooperation with the Bureau of Reclamation and the USGS.**

[Precipitation Data Disclaimer](#)

This station managed by the Flagstaff Field Office; USGS AZ-WSC.

Available Parameters	Available Period
<input type="checkbox"/> All 5 Available Parameters for this site	
<input checked="" type="checkbox"/> 00010 Temperature, water	2007-10-01 2018-09-26
<input checked="" type="checkbox"/> 00045 Precipitation	2018-05-29 2018-09-26
<input checked="" type="checkbox"/> 00060 Discharge	1985-10-01 2018-09-26
<input checked="" type="checkbox"/> 00065 Gage height	2007-10-01 2018-09-26

Example NWISWeb real-time water data page.

# Background

## Known risks of NWISWeb classic RT data pages

- Outmoded codebase in conflict with modern enterprise architecture and best practices.
- Challenge of IT consolidation, cloud mandate, and security vulnerabilities.
- Retirement of key staff and challenging onboarding of new staff.
- Outdated page design; poor usability for novice users.
- Truly satisfied overall: 82% (compare with 83% in 2017); truly dissatisfied overall: 8% (compare with 4% in 2017)<sup>1</sup>.

USGS  
science for a changing world

National Water Information System: Web Interface

Data Category: Current Conditions Geographic Area: United States GO

\* We've detected you're using a mobile device. Find our [mobile dedicated web site here](#).

Click to hide News Bulletins

- [Please see news on new formats](#)
- [Full News](#)

**USGS 09380000 COLORADO RIVER AT LEES FERRY, AZ**  
**PROVISIONAL DATA SUBJECT TO REVISION**

Available data for this site Time-series: Current/Historical Observations GO

Click to hide station-specific text

**Station operated in cooperation with the Bureau of Reclamation and the USGS.**

[Precipitation Data Disclaimer](#)

This station managed by the Flagstaff Field Office; USGS AZ-WSC.

Available Parameters	Available Period
<input type="checkbox"/> All 5 Available Parameters for this site	
<input checked="" type="checkbox"/> 00010 Temperature, water	2007-10-01 2018-09-26
<input checked="" type="checkbox"/> 00045 Precipitation	2018-05-29 2018-09-26
<input checked="" type="checkbox"/> 00060 Discharge	1985-10-01 2018-09-26
<input checked="" type="checkbox"/> 00065 Gage height	2007-10-01 2018-09-26



1. Annual USGS Water Data for the Nation Website User Survey. n=163; response rate = 18%.

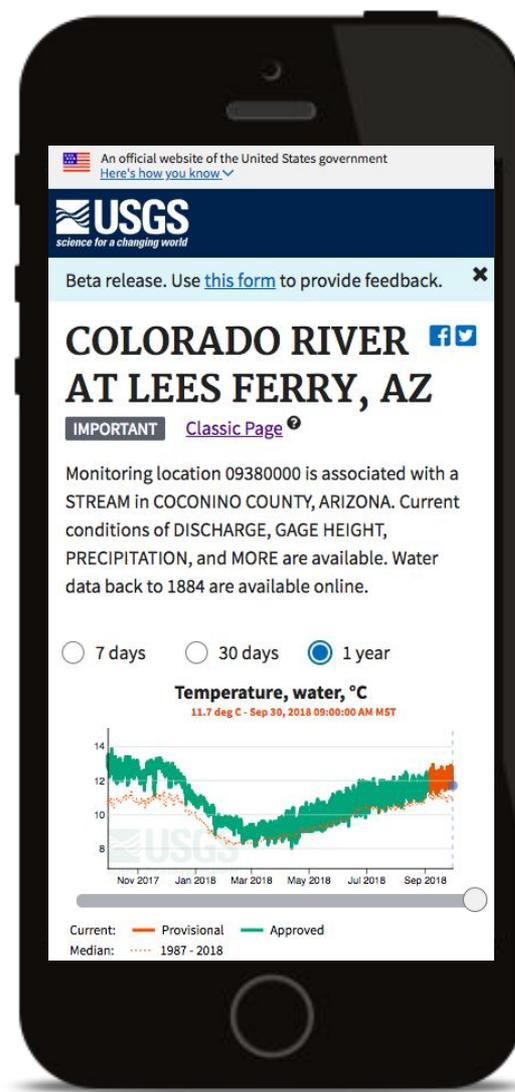
# Background

## Project goals

### Re-design NWISWeb real-time water data pages.

- Based on comprehensive inventory of existing functionality, WSC customization, user surveys, web analytics, and WMA strategic science goals.
- User interface redesign: Data first, mobil ready, human readable, and built for app integration.
- Modernize codebase and infrastructure: Cloud-ready code optimized for performance and up-time, instrumented with auditing tools and vulnerability detection. Data integrity and IT security are paramount.
- Iterative development process with frequent releases; engage users *early* in the development process to build a more effective product

<https://waterdata.usgs.gov/monitoring-location/09380000/>



# Data integration ready

## Mark-up based on an OGC Interoperability Experiment

```
<script type="application/ld+json">
  {
    "@context": [
      "https://opengeospatial.github.io/ELFIE/json-ld/elf-index.jsonld",
      "https://opengeospatial.github.io/ELFIE/json-ld/hyf.jsonld"
    ],
    "@id": "https://waterdata.usgs.gov/monitoring-location/09380000",
    "@type": "http://www.opengeospatial.org/standards/waterml2/hy_features/HY_HydroLocation",
    "name": "COLORADO RIVER AT LEES FERRY, AZ",
    "sameAs": "https://waterdata.usgs.gov/nwis/inventory/?site_no=09380000",
    "HY_HydroLocationType": "hydrometricStation",
    "geo": {
      "@type": "schema:GeoCoordinates",
      "latitude": "36.8643333",
      "longitude": "-111.5878722"
    },
    "image": "https://waterdata.usgs.gov/nwisweb/graph?agency_cd=USGS&site_no=09380000&parm_cd=00060&period=100"
  }
</script>
```

<http://www.opengeospatial.org/projects/initiatives/elfie>



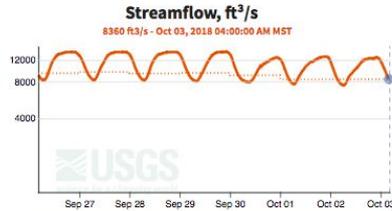
Beta release. Use [this form](#) to provide feedback.

## COLORADO RIVER AT LEES FERRY, AZ

IMPORTANT [Classic Page](#)

Monitoring location 09380000 is associated with a STREAM in COCONINO COUNTY, ARIZONA. Current conditions of DISCHARGE, GAGE HEIGHT, PRECIPITATION, and MORE are available. Water data back to 1884 are available online.

7 days  30 days  1 year



Current: — Provisional  
Median: - - - - 1922 - 2018  
 Compare to last year

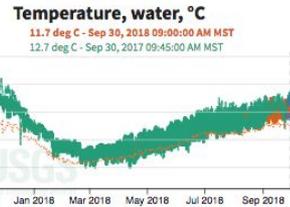


## COLORADO RIVER AT LEES FERRY, AZ

IMPORTANT [Classic Page](#)

Monitoring location 09380000 is associated with a STREAM in COCONINO COUNTY, ARIZONA. Current conditions of DISCHARGE, GAGE HEIGHT, PRECIPITATION, and MORE are available. Water data back to 1884 are available online.

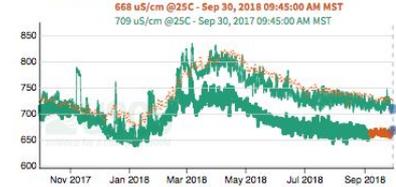
7 days  30 days  1 year



Current: — Provisional  
Last year: — Provisional  
Median: - - - - 1987 - 2018  
 Compare to last year

7 days  30 days  1 year

### Specific conductance, water, unfiltered, microsiemens per centimeter at 25°C



Current: — Provisional  
Last year: — Provisional  
Median: - - - - 1990 - 2018  
 Compare to last year

#### Select a time series

- Discharge, cubic feet per second 1
- Gage height, feet 1
- Precipitation, total, inches 1
- Specific conductance, water, unfiltered, microsiemens per centimeter at 25 degrees Celsius 1

Provisional Data Statement



### Provisional Data Statement

Provisional data may be inaccurate due to instrument malfunctions or physical changes at the measurement site. Subsequent review based on field inspections and



#### Summary

#### Location Metadata

[Email USGS questions about this site](#)

Operated in cooperation with:



Arizona Department of Environmental Quality



US Bureau of Reclamation - Lower Colorado Region



#### Summary

USGS Parameter Group	Data Types	Start Date	End Date
Biological	Water-quality	1974-12-30	2018-09-06
Information	Water-quality	1947-10-01	2018-09-06
Inorganics, Major, Metals	Water-quality	1926-01-11	2018-08-27
Inorganics, Major, Non-metals	Water-quality	1926-01-11	2018-09-06
Inorganics, Minor, Non-metals	Water-quality	1928-08-01	2018-08-27
Inorganics, Minor, metals	Water-quality	1926-01-11	2018-08-27
Microbiological	Water-quality	1974-03-19	2018-06-05
Nutrient	Water-quality	1926-	2018-

#### Location Metadata

Metadata Element	Location Metadata	Metadata Code
Agency	U.S. Geological Survey	USGS
Site identification number	09380000	n/a
Site name	COLORADO RIVER AT LEES FERRY, AZ	n/a
Site type	Stream	ST
DMS latitude	365151.60	n/a
DMS longitude	1113516.34	n/a
Decimal latitude	36.8643333	n/a
Decimal longitude	-111.5878722	n/a
Latitude-longitude method	Interpolated from Digital MAP.	N
Latitude-longitude accuracy	Accurate to + or -.5 sec (PLGR/PPS GPS).	5
Latitude-	North American	

# Internal Feedback Summary



Beta release. Use [this form](#) to provide feedback.



## **The majority of internal feedback is requesting features that currently exist on NWISWeb.**

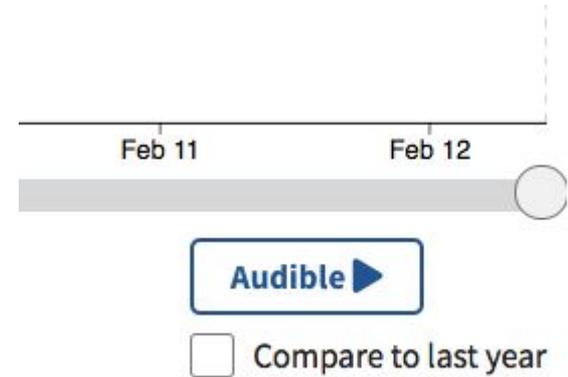
- Display more than 7-day data ✓
- Cooperator logo display ✓
- Show National Weather Service flood forecast information and flood threshold levels when available (*FY19*).
- Download data in tabular format (*FY19*).
- Flexible start and end-dates for hydrograph, with ability to plot multiple time series and multiple sites simultaneously (*FY19*).
- Ability to display unstructured, customizable station-specific text under full field-staff control (*TBD*).

Public-facing project board with feedback categorized by feature types: <https://github.com/usgs/waterdataui/projects/2>



# Coming Features

- Accessible Graphs via sonification
- Groundwater data display
- Discrete data summary and display
- Hydrologic and other home pages
  - Hydrologic Features (rivers/lakes)
  - Hydrologic Units
  - States and Counties
- Networks
  - Hydrologic
  - Cooperative, science, or business networks (federal priority streamgages)



# Learn more

- Blog: <https://waterdata.usgs.gov/blog/>
- Github: <https://github.com/usgs/waterdataui>
- Feedback welcome, at the top of every page

Beta release. Use [this form](#) to provide feedback.

jkreft@usgs.gov