



Using IDWR's Evapotranspiration Viewer

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Why do we need an ET Viewer?

The IDWR has developed evapotranspiration (ET) datasets for more than a dozen irrigation seasons, dating as far back as 1986. These primarily cover the eastern half of Idaho but are available for all of southern Idaho, for a couple of years.

Prior to publishing the ET Viewer, most requests for ET estimations (and all requests for consumptive irrigation requirements) were filled by remote sensing staff using desktop GIS tools. Now, users can perform those calculations themselves.

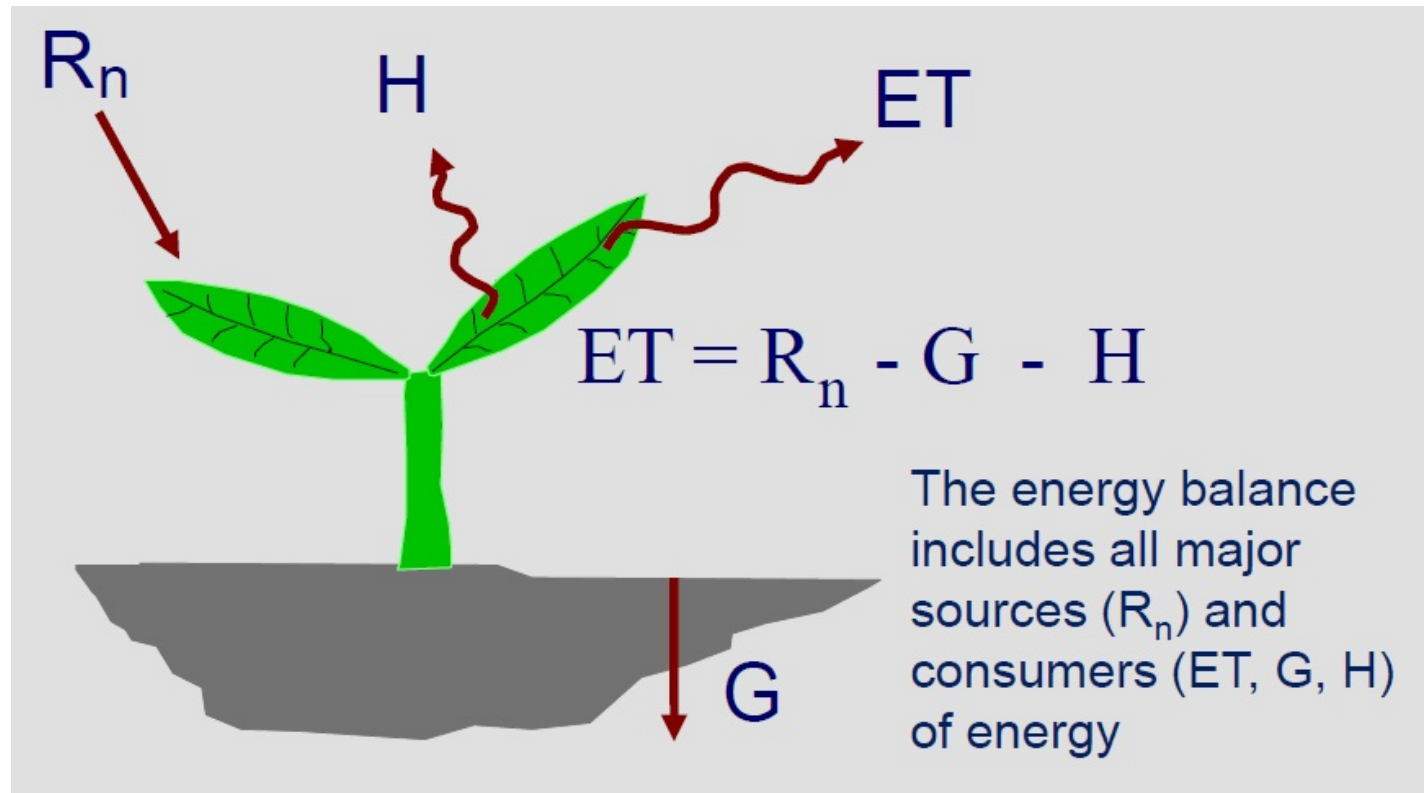
Evapotranspiration is important

The IDWR is responsible for the administration and management of Idaho waters which include the measurement and the accounting of consumptive and non-consumptive uses of water.

Idaho has 3.4 million acres of irrigated agriculture that accounts for over 90% of the consumptive use in the state. Evapotranspiration (ET) from irrigated agriculture is synonymous with consumptive use.

Energy Balance for ET

ET is calculated as a “residual” of the energy balance



ET Mapping

SEBAL and METRIC

These models estimate **actual ET** from Landsat imagery. No crop information is required. ET per pixel can be aggregated.

- **Surface Energy Balance Algorithm for Land**
- **Mapping Evapotranspiration at high Resolution with Internalized Calibration**

Dr. R. Allen, Dr. M. Tasumi, Dr. R. Trezza
University of Idaho, Kimberly – *beginning in 2000*
– *rooted in SEBAL*

Why not use other satellites

METRIC requires **surface temperature** data. Landsat is the only **operational** satellite with a “**thermal band**” and a pixel size small enough to map ET for **individual fields**!

- **MODIS**: 500 meter pixels
- **AVHRR**: 1000 meter pixels
- **SPOT**: no thermal band
- **IRS AWiFS**: no thermal band
- **Aster**: for research
- **Sentinel**: no thermal band

Applying METRIC at IDWR

Here are many of the ways that the IDWR uses output from the METRIC energy balance model.

- Hydrological Modeling
- Water Delivery Call
- Curtailment Order
- Water Planning
- Endangered Species
- Water Rights Buy-Back

Evapotranspiration Viewer

The IDWR ***ET Viewer*** allows users to work with evapotranspiration (ET) datasets for Idaho.

Users can display ET datasets on a map, query values of individual pixels, download ET datasets and calculate ET and consumptive irrigation requirements (CIR) statistics for their area-of-interest.

ET Viewer – Initial page

Select ET data by one of the following:

Date, County, IDWR Administrative Basin,
Irrigation entity or Landsat scene.

Click the  button.

or

Select an area-of-interest from the initial map.

ET Viewer – Initial Page

GIS
Idaho

Evapotranspiration

Home

Find ET

Help

Home

IWRB

Idaho.gov

Contact Us

IDAHO

Department of
Water Resources

DWR Evapotranspiration Viewer

Zoom In

Zoom Out

Pan

Identify

Help with Map

This application uses pop-ups to allow detailed statistics to be displayed or data to be downloaded or saved as a PDF. Please make sure that your pop-up blocker allows pop-ups from maps.idwr.idaho.gov.

There are two ways to use the **ET Viewer** to calculate ET statistics:

[Find ET Data](#) Go to the page where you can find ET datasets by date, county, administrative basin, irrigation company or Landsat path/row. This takes the same action as clicking the [Find ET](#) link, on the toolbar.

or

Use this map to zoom to your area-of-interest and then click the map. That action causes the ET statistics page to be displayed; the map will be positioned to your area-of-interest. The most recent seasonal ET dataset for the area will be displayed.

Use the [Help](#) link, on the toolbar, to see how to run the tools.

About the ET Data

The evapotranspiration (ET) data were developed using the [METRIC](#) model and [Landsat](#) satellite data. **METRIC** is a satellite-based surface energy balance model developed by the [University of Idaho](#).

Most of the ET data are referenced by Landsat Path and Row. Idaho is covered by paths 38 to 43 from east to west and by rows 26 to 31 from north to south, as shown on the interactive map. Each Landsat image is approximately 180 km in length and 185 km in width.

About the ET Viewer

The IDWR **ET Viewer** allows users to find evapotranspiration (ET) datasets for Idaho, display them on a map and calculate ET and consumptive irrigation requirements (CIR) statistics for an area. It has built-in tools to help you select an irrigation company or water rights place of use as your area-of-interest. Alternatively, you can draw a polygon to define your own area-of-interest or select from irrigated lands polygons.

ET Viewer – Search page

Select ET data by one of the following:

- Date
- County
- IDWR Administrative Basin
- Irrigation entity – irrigation company/district, canal company, etc.
- Landsat path/row

ET Viewer – Example

Select an IDWR Administrative Basin

From the **Search** page, open the Administrative Basin panel and select from the list.

Search For Evapotranspiration Data Sets

Choose a search method below.

Date

County

Administrative Basin

Choose an IDWR Administrative Basin to search in. Not all IDWR Administrative Basins have ET data

Choose Administrative Basin

21 - Henrys Fork

No Administrative Basin Selected

11 - Bear River - Bear lake to Soda Springs

13 - Bear River - Soda Springs to Utah border

15 - Malad River

17 - Deep Creek

21 - Henrys Fork

ET Viewer – Search results

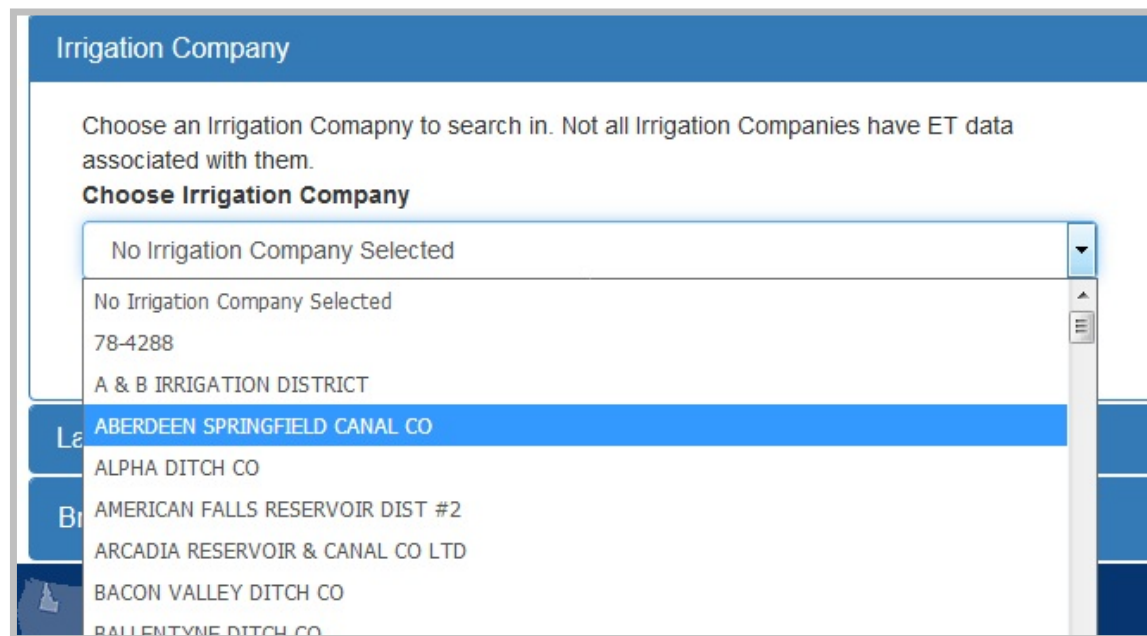
Once you have queried the database, a list of ET datasets are presented at the bottom of the page.

Name ▲	Date	Location ◆	Action ◆
Path 39 - 40 - April 2000	4/1/2000	Path 3940	ET Statistics
Path 39 - 40 - October 1996	10/1/1996	Path 3940	ET Statistics
Path 39 - 40 - April 1 - October 31, 1986	4/1/1986	Path 3940	ET Statistics
Path 39 - 40 - April 1 - October 31, 2008	4/1/2008	Path 3940	ET Statistics
Path 39 - 40 - April 1 - October 31, 2009	4/1/2009	Path 3940	ET Statistics
Path 39 - 40 - April 1 - October 31, 2010	4/1/2010	Path 3940	ET Statistics
Path 39 - 40 - April 1 - October 31, 2011	4/1/2011	Path 3940	ET Statistics
Path 39 - 40 - April 1 - October 31, 2013	4/1/2013	Path 3940	ET Statistics

ET Viewer – Example

Select an Irrigation Company

From the **Search** page, open the Irrigation Company panel and select from the list.



The screenshot shows a web interface titled "Irrigation Company". Below the title is a text instruction: "Choose an Irrigation Company to search in. Not all Irrigation Companies have ET data associated with them." Below this is a section labeled "Choose Irrigation Company" containing a dropdown menu. The dropdown menu is currently open, showing a list of irrigation companies. The first two items are "No Irrigation Company Selected". The third item is "78-4288". The fourth item is "A & B IRRIGATION DISTRICT". The fifth item, "ABERDEEN SPRINGFIELD CANAL CO", is highlighted in blue. Below it are "ALPHA DITCH CO", "AMERICAN FALLS RESERVOIR DIST #2", "ARCADIA RESERVOIR & CANAL CO LTD", "BACON VALLEY DITCH CO", and "BALLETYNNE DITCH CO".

Irrigation Company

Choose an Irrigation Company to search in. Not all Irrigation Companies have ET data associated with them.

Choose Irrigation Company

No Irrigation Company Selected

No Irrigation Company Selected

78-4288

A & B IRRIGATION DISTRICT

ABERDEEN SPRINGFIELD CANAL CO

ALPHA DITCH CO

AMERICAN FALLS RESERVOIR DIST #2

ARCADIA RESERVOIR & CANAL CO LTD

BACON VALLEY DITCH CO

BALLETYNNE DITCH CO

ET Viewer – Details page

Details of the ET datasets are explored on this page.
Users can do the following:

- View ET datasets on a map

- Query values of individual pixels

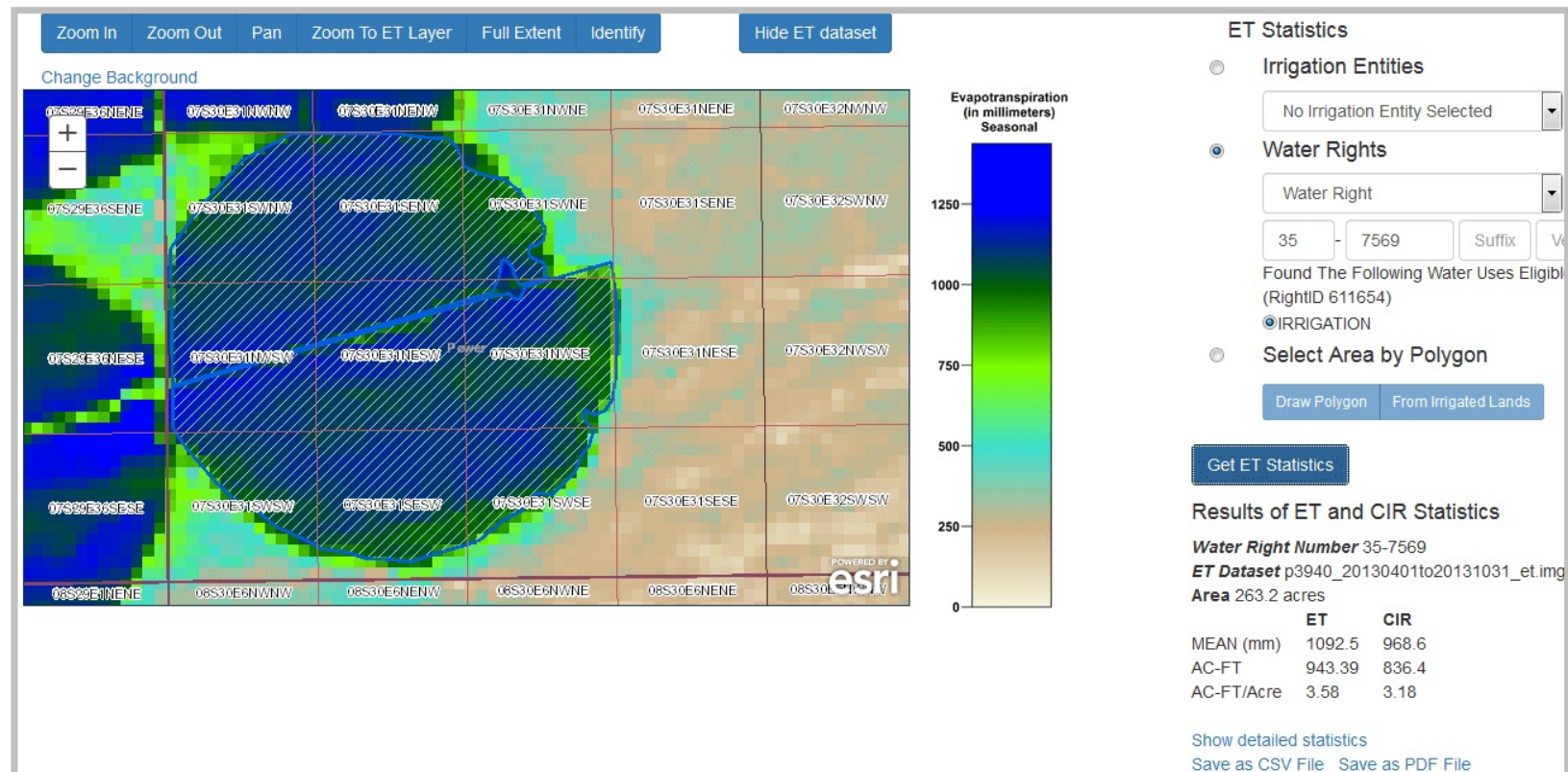
- Calculate ET and consumptive irrigation requirements (CIR) statistics for their area-of-interest

- Save statistics in CSV-format or PDF

- Download ET datasets for an entire year

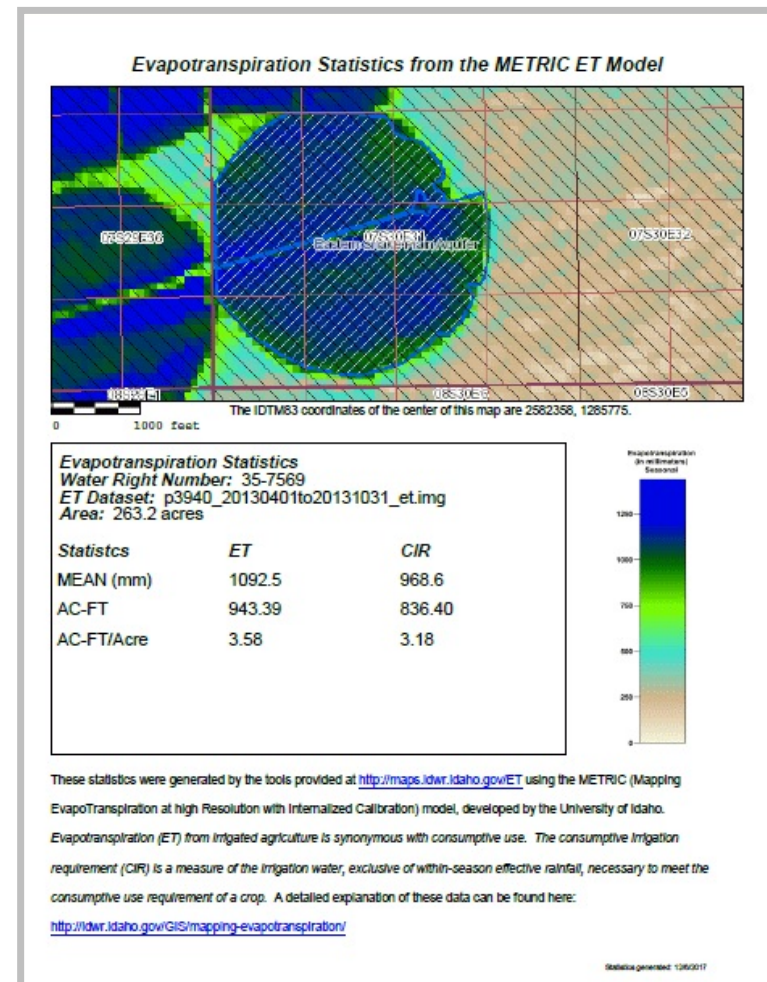
ET Viewer – Details example

Get statistics for irrigation water right 35-7569:



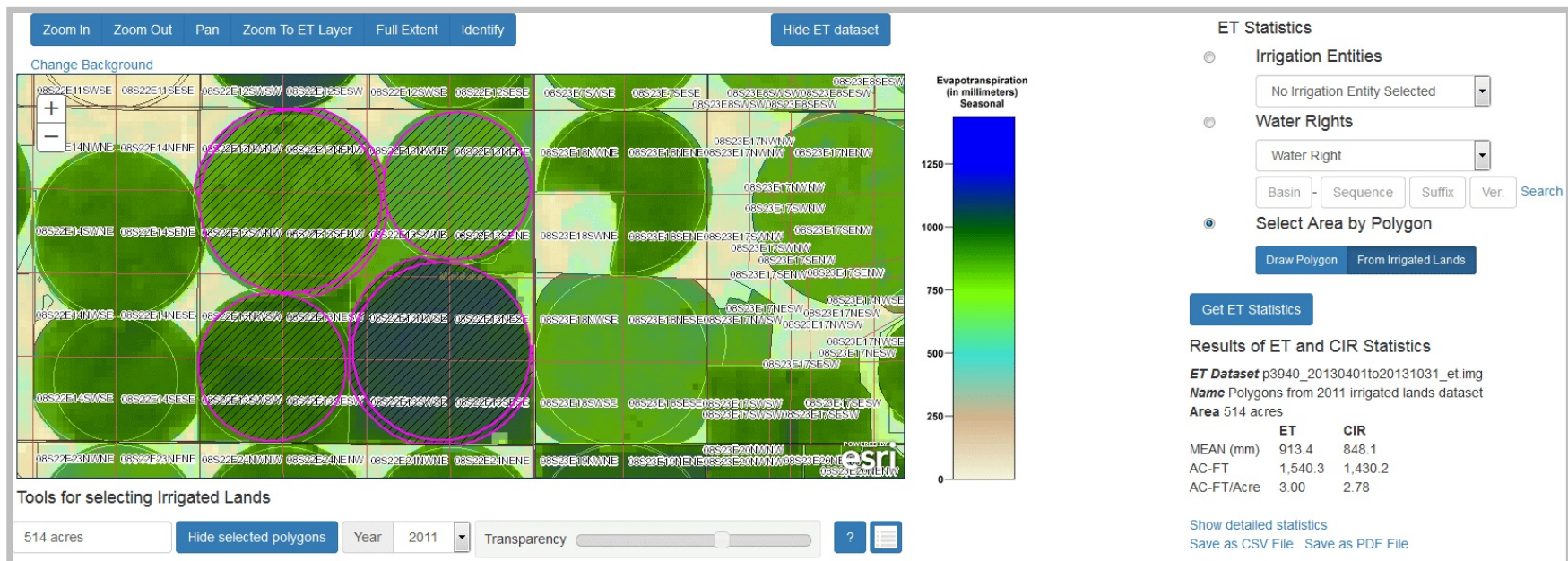
ET Viewer – Report as PDF

The statistics for water right 35-7569 can be printed and/or stored electronically with the rest of the water rights information.



ET Viewer – Details example

Get statistics for irrigated-lands polygons:



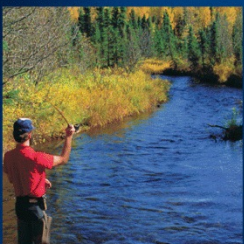
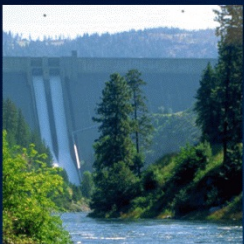
More Information

The technical details of the METRIC-model software used to analyze the data, and specific use-cases, are explained in presentations and maps available at <http://idwr.idaho.gov/GIS/mapping-evapotranspiration>

The *ET Viewer* can be found at <http://maps.idwr.idaho.gov/ET>

If you have comments or questions, please contact us at GISInfo@idwr.idaho.gov

0 25 50 100 Kilometers



Thank you.

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