**Conceptual mapping of water allocations data from the Montana API into WaDE 2.0**

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Data source (needs credintails)

<https://gis.dnrc.mt.gov/arcgis/rest/services/WRD/WRD_WaDE/MapServer>

All data services (needs credintails)

<https://gis.dnrc.mt.gov/arcgis/rest/services>

Public data source search engine

<http://wrqs.dnrc.mt.gov/default.aspx>

Example data from the public searh engine <http://wrqs.dnrc.mt.gov/ResultsWS.aspx?search=advanced&index=1&status=ACTV!SEVR&source=S&purpose=WE>

Dictionary and Look up values

<http://wrqs.dnrc.mt.gov/WRKey.aspx>

**Issues to address**

1. Flow amount come in two units (gallons and cubic feets). We probably could store both but it would be best if we convert the gallons to cubic feet for consistency especially in visualiziations
2. The coordinates are in X\_METERS and Y\_METERS (we either have to convert them to the decimal coordinates, or we could ask them if they could do it)
3. Not all the water rights are geo referenced. They have a column called “XY\_MAPPED” with Y or N values.
4. Metadata to add if possible: WaterQualityIndicatorCV

All (GW and SW) combined

Naturally occuring

Priority date

There could be missing data for terminated or canceled.

VER\_Type: Diversion Type

Record session for the place of use and another for the place of diversion

One to many between water right and place of use

WTR\_RIGHTS\_1: all water rights that exisit witin a land

Water rights are consumptivr or non-consumptive

WRKEY: tracks water right version

Repeating rows in case there are multiple places of use

Centroid of the legal land description (not of the actual water right centeroild)

Drop the URL in the ESRI online wb-service and should be able to get the CSV file.

Water right public water supplier (most of them are commercial). Municiapl purpose is for public water supply. (public water supplier name: its under the owner)

The same water right might appear many times

Status counts for water rights

|  |  |
| --- | --- |
| **WRST\_CD** | **COUNT(WR#)** |
| ACTV | 365641 |
| TERM | 18108 |
| WDRN | 13042 |
| DISS | 6459 |
| CANC | 2378 |
| PEND | 1595 |
| SSPD | 1286 |
| RVKD | 202 |
| SEVR | 143 |
| EXPR | 59 |
| DENY | 54 |
| **TOTAL** | **408967** |

|  |  |  |
| --- | --- | --- |
| **WaterAllocations (WaDE)** | **MT column name** | **Hardcoded value or logic** |
| OrganizationUID |  | MTDNRC |
| SiteID | PODID | From sites tables with PODID lookup |
| VariableSpecificUID |  | “MTDNRC Allocation all” |
| WaterSourceID |  | Use the SRCNAME and SRCTYPE to look it up |
| MethodID |  | “MTDNRC-Water Rights” |
| BeneficialUseID | PURPOSES |  |
| NativeAllocationID | WRNUMBER |  |
| WaterAllocationTypeCV | WRTYPE |  |
| AllocationOwner | ALL\_OWNERS |  |
| AllocationApplicationDate |  | Leave it empty |
| AllocationPriorityDate | PRTY\_DATE |  |
| AllocationLegalStatusCV | STATUS |  |
| PrimaryUseCategory |  | “Irrigation” |
| AllocationCropDutyAmount |  | Leave it empty |
| AllocationExpirationDate |  | Leave it empty |
| AllocationChangeApplicationIndicator |  | Leave it empty |
| LegacyAllocationIDs |  | Leave it empty |
| AllocationBasisCV |  | “Unknown” |
| AllocationAcreage | MAX\_ACRES |  |
| TimeframeStart | PER\_USE  PER\_DIV | The start mm/dd before the “to”  01/01 # check all values are same |
| TimeframeEnd | PER\_USE  PER\_DIV | The end mm/dd after the “to”  12/31 # check all values are same |
| AllocationAmount |  | FLW\_RT\_CFS, FLW\_RT\_GPM |
| AllocationMaximum | VOLUME |  |
| WaterAllcationNativeURL | NRIS\_LINK |  |

**Sites**

|  |  |  |
| --- | --- | --- |
| **WaDE** |  | **Hard coded value/comment** |
| SiteUUID |  | MT\_SiteNativeID |
| SiteNativeID | PODID |  |
| SiteName | DITCH\_NAME |  |
| USGSSiteID |  | Leave it empty |
| SiteTypeCV | MEANOFDIV |  |
| Longitude\_x | X\_METERS | Project to lat lon |
| Latitude\_y | Y\_METERS | Project to lat lon |
| Geometry | shape |  |
| CoordinateMethodCV |  |  |
| CoordinateAccuracy |  |  |
| GNISCodeCV |  |  |
| EPSGCodeCV |  | EPSG:4236 |
| NHDNetworkStatusCV |  |  |
| NHDProductCV |  |  |
| NHDUpdateDate |  |  |
| NHDReachCode |  |  |
| NHDMeasureNumber |  |  |

**WaterSources\_dim**

|  |  |  |
| --- | --- | --- |
| **WaDE** |  |  |
| WaterSourceUUID |  | MT\_WaterSourceNativeID |
| WaterSourceNativeID |  | Auto generate |
| WaterSourceName | SRCNAME |  |
| WaterSourceTypeCV | SRCTYPE |  |
| WaterQualityIndicatorCV |  | Fresh |
| GNISFeatureNameCV |  |  |
| Geometry |  |  |

**Methods**

Modify existing variables table

|  |  |  |
| --- | --- | --- |
| **WaDE** | Value | comment |
| MethodUUID |  | MTDNRC-Water Rights |
| MethodName |  | Montana Water Rights |
| MethodDescription |  | Water Rights |
| MethodNEMILink |  | <http://wrqs.dnrc.mt.gov/default.aspx> |
| ApplicableResourceTypeCV |  | Surface Ground |
| MethodTypeCV |  | Adjudicated |
| DataCoverageValue |  |  |
| DataQualityValueCV |  |  |
| DataConfidenceValue |  |  |

**Variables**

Modify existing variables table

|  |  |
| --- | --- |
| Column | Value |
| VariableUUID | MTDNRC Allocation all |
| VariableSpecificCV | Allocation All |
| VariableCV | Allocation |
| AggregationStatisticCV | Average |
| AggregationInterval | 1 |
| AggregationIntervalUnitCV | Year |
| ReportYearStartMonth | 10 |
| ReportYearTypeCV | WaterYear |
| AmountUnitCV | CFS |
| MaximumAmountUnitCV | AF |

**Organizations**

Modify existing table

**Add the beneficial use table**

|  |  |  |
| --- | --- | --- |
| **WaDE** |  |  |
| BeneficialUseCategory |  |  |
| PrimaryUseCategory |  |  |
| USGSCategoryNameCV |  |  |
| NAICSCodeNameCV |  |  |

**Purposes**

|  |  |
| --- | --- |
| **Code** | **Purpose** |
| DM | DOMESTIC |
| IR | IRRIGATION |
| LG | LAWN AND GARDEN |
| MC | MUNICIPAL |
| ST | STOCK |
| AS | AGRICUTURAL SPRAYING |
| AG | AUGMENTATION |
| CM | COMMERCIAL |
| DE | DEWATERING |
| EC | EROSION CONTROL |
| FP | FIRE PROTECTION |
| FW | FISH AND WILDLIFE |
| FR | FISH RACEWAYS |
| FS | FISHERY |
| FC | FLOOD CONTROL |
| FF | FLOW THROUGH FISH POND |
| GE | GEOTHERMAL |
| GH | GEOTHERMAL HEATING |
| IN | INDUSTRIAL |
| IS | INSTITUTIONAL |
| MN | MINING |
| MD | MULTIPLE DOMESTIC |
| MN | MINING |
| NV | NAVIGATION |
| OT | OBSERVATION AND TESTING |
| OF | OIL WELL FLOODING |
| OP | OTHER PURPOSE |
| XX | OTHER PURPOSE |
| PA | POLLUTION ABATEMENT |
| PG | POWER GENERATION |
| PN | POWER GENERATION, NONCONSUMPTIVE |
| RC | RECREATION |
| SL | SALE |
| SC | SEDIMENT CONTROL |
| SG | STORAGE |
| XO | UNKNOWN |
| WF | WATER FOWL |
| WI | WILDLIFE |
| WW | WILDLIFE/WATERFOWL |