Answer:

Q1:

SELECT

Station.STATION\_ID,

Station.STATION\_NAME,

Station.COUNTY\_NAME,

Lab\_results.RESULT,

max(Lab\_results.RESULT) over (partition by Station.STATION\_ID) as MaxR,

Lab\_results.PARAMETER,

Lab\_results.SAMPLE\_DATE

FROM

Lab\_results INNER JOIN

Station ON Lab\_results.STATION\_ID = Station.STATION\_ID

WHERE

(Lab\_results.PARAMETER = N'Dissolved Ammonia')

AND

(Lab\_results.SAMPLE\_DATE < CONVERT(DATETIME, '2016-04-30 00:00:00', 102)) AND (Station.STATION\_ID = '10' OR

Station.STATION\_ID = '87')

order by

Station.STATION\_ID,

Lab\_results.SAMPLE\_DATE

;

Q2:

with RA as

(

SELECT

Station.STATION\_ID,

Station.COUNTY\_NAME,

Lab\_results.PARAMETER,

Lab\_results.SAMPLE\_DATE,

Lab\_results.RESULT,

avg (Lab\_results.RESULT) over (partition by Lab\_results.PARAMETER) as AvgR

FROM Station INNER JOIN

Lab\_results ON Station.STATION\_ID = Lab\_results.STATION\_ID

)

select

STATION\_ID,

COUNTY\_NAME,

PARAMETER,

SAMPLE\_DATE,

RESULT,

CAST (AvgR AS decimal(8,2)) AvgR,

CAST (RESULT/AvgR AS decimal(8,2)) as Ratio1

from

RA

where

result > 40\*AvgR

order by Ratio1 desc

;

Q3:

SELECT Station.COUNTY\_NAME

FROM Station INNER JOIN

Lab\_results ON Station.STATION\_ID = Lab\_results.STATION\_ID

WHERE (Lab\_results.PARAMETER = N'Dissolved Arsenic') AND (Lab\_results.RESULT > 0.5)

intersect

SELECT Station.COUNTY\_NAME

FROM Station INNER JOIN

Lab\_results ON Station.STATION\_ID = Lab\_results.STATION\_ID

WHERE (Lab\_results.PARAMETER = N'Dissolved Hardness') AND (Lab\_results.RESULT > 250)

;

Q4:

with st as

(

SELECT Station.STATION\_ID, Station.STATION\_NAME, Lab\_results.SAMPLE\_DATE, Lab\_results.RESULT

FROM Station INNER JOIN

Lab\_results ON Station.STATION\_ID = Lab\_results.STATION\_ID

WHERE (Lab\_results.PARAMETER = N'Turbidity')

)

select

st1.STATION\_ID,

st1.STATION\_NAME,

st1.SAMPLE\_DATE as First\_Dt,

st2.SAMPLE\_DATE as Scend\_Dt,

st1.RESULT as FirstR,

st2.RESULT as SecondR

from

st st1,

st st2

where st1.STATION\_ID = st2.STATION\_ID

and st1.RESULT-st2.RESULT > 35

;